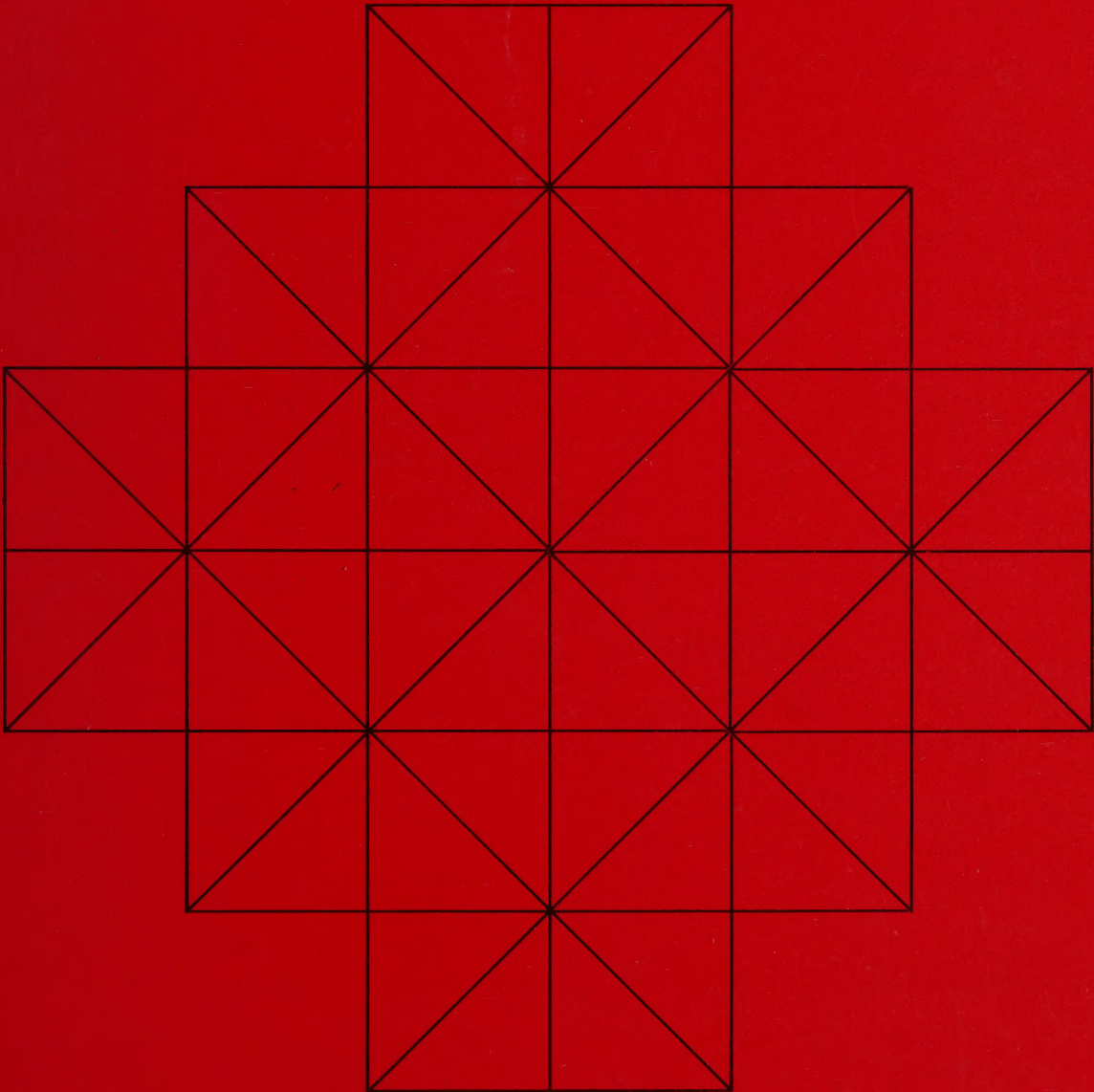


1983-84

 Rush-Presbyterian-St. Luke's
Medical Center

Rush University Bulletin



Academic Calendar 1983-84

	X Courses*		Y Courses*
Orientation and Registration		September 15-16	
Fall Quarter Classes Begin		September 19	
Thanksgiving Holiday		November 24-25	
Classes End	November 29		December 9
Examination Period	November 30-December 9		December 12-16
Fall Quarter Ends	December 10		December 17
Christmas Break			
Winter Quarter Begins		January 3	
Classes End	March 9		March 16
Examination Period	March 12-16		March 19-23
Winter Quarter Ends	March 17		March 24
Spring Break			
Spring Quarter Begins	March 26		April 2
Rush University Day		May 9	
Memorial Day Break		May 28	
Classes End	June 1		June 8
Examination Period	June 4-8		June 11-15
Spring Quarter Ends	June 9		June 16
Commencement Day		June 9	
Break			
Summer Quarter Begins		June 25	
Independence Day Holiday		July 4	
Classes End		August 29	
Examination Period		August 30-31	
Summer Quarter Ends		September 1	

Academic Calendar 1984-85

	X Courses*		Y Courses*
Orientation and Registration		September 13-14	
Fall Quarter Classes Begin		September 17	
Thanksgiving Holiday		November 22-23	
Classes End	November 27		December 7
Examination Period	November 28-December 7		December 10-14
Fall Quarter Ends	December 8		December 15
Christmas Break			
Winter Quarter Begins		January 2	
Classes End	March 8		March 15
Examination Period	March 11-15		March 18-22
Winter Quarter Ends	March 16		March 23
Spring Break			
Spring Quarter Begins	March 25		April 1
Rush University Day		May 8	
Memorial Day		May 27	
Classes End	May 31		June 7
Examination Period	June 3-7		June 10-14
Spring Quarter Ends	June 8		June 15
Commencement Day		June 8	
Break			
Summer Quarter Begins		June 24	
Independence Day Holiday		July 4	
Classes End		August 28	
Examination Period		August 29-30	
Summer Quarter Ends		August 31	

*To accommodate varying needs of the academic programs, Rush University has adopted a unique calendar. Listed above, the X and Y schedules have the same format, but the Y schedule is one week longer than the X schedule. All students except third- and fourth-year medical students take courses under the X or Y schedule. Third- and fourth-year medical students have 4-, 6-, 8- and 12-week

modules for their clerkships. Students taking courses in more than one college during the same quarter may have classes under both X and Y schedules. However, most students will follow one schedule only. These schedules permit the organization of class time in a manner consistent with unique program requirements.

1983-84

Rush-Presbyterian-St. Luke's Medical Center, Chicago

Rush University Bulletin

This Bulletin is published for the faculty and students of Rush University. The University reserves the right to make changes in any or all specifications contained herein and to apply such revisions to registered and accepted students.

Rush University
600 S. Paulina Street
Chicago, Illinois 60612

Rush University

Degrees in the Health Professions

1983-1984

Rush Medical College	Doctor of Medicine
College of Nursing	Bachelor of Science Master of Science Practitioner Programs Anesthesia Community Health Clinical Specialist Programs Gerontology Medical/Surgical Oncology Parent/Child Health Psychiatry/Mental Health Rehabilitation Doctor of Nursing Science
College of Health Sciences	Bachelor of Science Medical Technology Master of Science Audiology Clinical Nutrition Health Systems Management Medical Physics Occupational Therapy Speech-Language Pathology
The Graduate College	Doctor of Philosophy Anatomical Sciences Biochemistry Immunology Pharmacology Physiology Psychology

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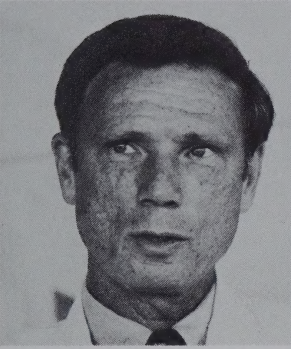
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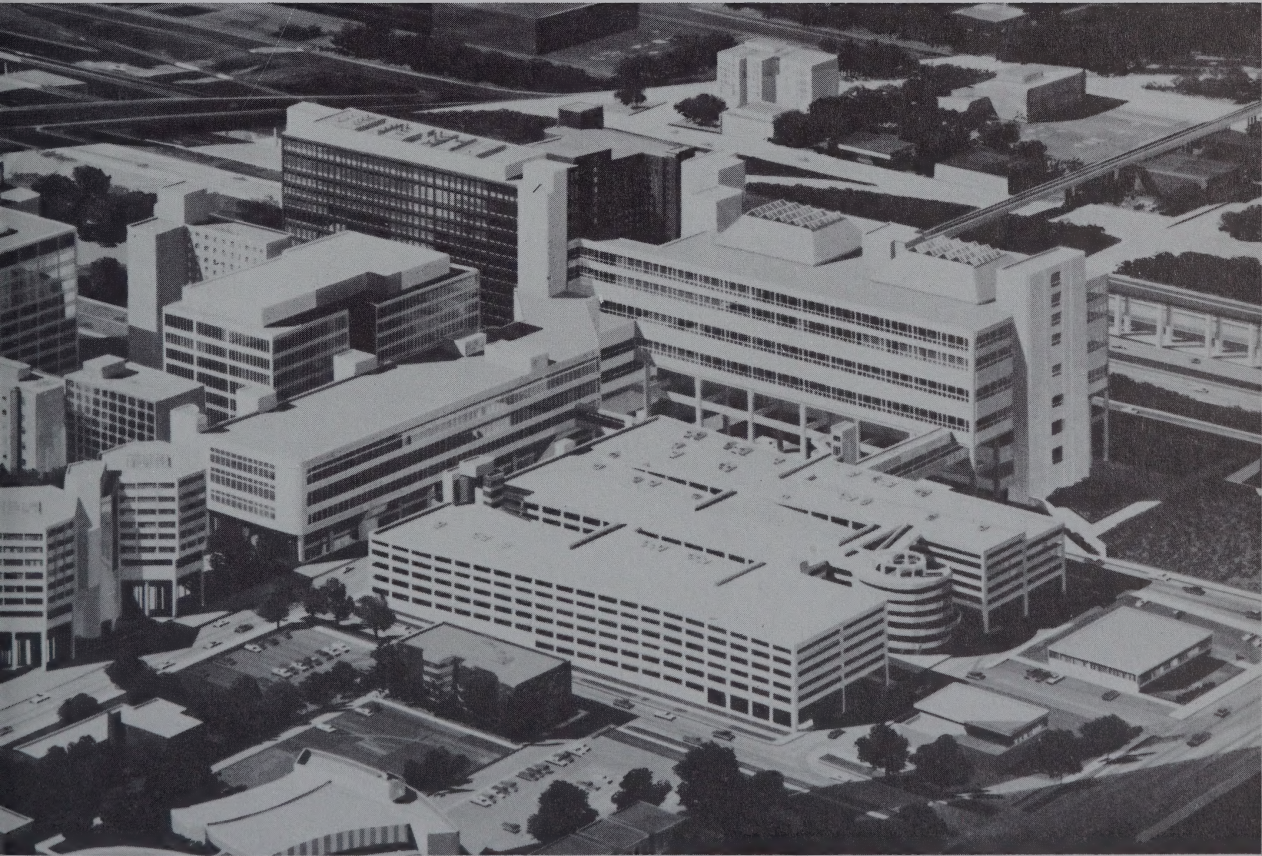
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"The academic medical center affords the best opportunity for health professionals to study their roles and their responsibilities for patient care, and to carry out some healthy introspection into how their relationships with one another and other members of the hospital health team may affect the well-being of patients."

*James A. Campbell, M.D., President
Rush-Presbyterian-St. Luke's Medical Center*



GENERAL INFORMATION

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The Medical Center

Rush-Presbyterian-St. Luke's Medical Center (RPSLMC) is one of Chicago's oldest health care organizations. Its heritage extends back to 1837 when Rush Medical College was established. St. Luke's Hospital was founded in 1864 and Presbyterian Hospital in 1883. The merger of these pioneer institutions in 1969 created the present day Rush-Presbyterian-St. Luke's Medical Center, which includes:

- Rush University, a health professions institution of higher education that enrolled 1,146 students in 1982-83.
- Presbyterian-St. Luke's Hospital, a 903-bed major referral center that provides primary care to its immediate community and secondary and tertiary care to patients from across the country. The hospital admitted 30,231 patients and performed 16,394 operations in 1982.
- The Johnston R. Bowman Health Center for the Elderly, a 176-bed short-term rehabilitation facility that is a national model for hospital-based geriatric care. The center admitted 2,337 patients in 1982.
- Sheridan Road Hospital, a 186-bed community hospital serving the north side of Chicago. In 1982, a total of 2,160 patients were admitted to the hospital.

The Medical Center is the hub of a network of 15 hospitals and health care agencies in Chicago, Illinois, and in Indiana, and of an educational network of 15 colleges and universities in six states. (See Rush University Affiliations.) Through its own programs and in conjunction with its affiliated institutions, the Medical Center is the central initiating component of a comprehensive cooperative health organization designed to provide care for some 1.5 million people in northern Illinois. This network includes:

Associated Institutions

Christ Hospital, Oak Lawn, Illinois; 873 beds
 Mount Sinai Hospital Medical Center, Chicago, Illinois; 464 beds
 Schwab Rehabilitation Hospital, Chicago, Illinois; 67 beds

Affiliated Institutions

Bethany Hospital, Chicago, Illinois; 160 beds
 Central DuPage Hospital, Winfield, Illinois; 361 beds
 Community Memorial General Hospital, LaGrange, Illinois; 276 beds

Copley Memorial Hospital, Aurora, Illinois; 320 beds

Galesburg Cottage Hospital, Galesburg, Illinois; 265 beds

Grant Hospital of Chicago, Chicago, Illinois; 508 beds

LaPorte Hospital, LaPorte, Indiana; 213 beds

St. Mary's Hospital, Streator, Illinois; 248 beds

Skokie Valley Hospital, Skokie, Illinois; 265 beds

Swedish Covenant Hospital, Chicago, Illinois; 355 beds

West Suburban Hospital Medical Center, Oak Park, Illinois; 374 beds

Mile Square Health Center, Inc., Chicago, Illinois; 43,000 registered outpatients

The University

Rush University is the academic component of Rush-Presbyterian-St. Luke's Medical Center. Founded in 1972, the University has expanded from one college and fewer than 100 students to four colleges and more than 1,100 students. It includes:

- Rush Medical College, chartered in 1837, opened officially on December 4, 1843, with 22 students enrolled in a 16-week course. During the first century of operation more than 10,000 physicians received their training at Rush Medical College. Rush Medical College was affiliated with The University of Chicago from 1898 until 1941, when the medical college temporarily suspended its educational program though it continued its corporate existence. Its faculty continued undergraduate and graduate teaching of medicine and the biological sciences as members of the faculty of the University of Illinois. The charter of the medical college was reactivated in 1969 when it became part of the Medical Center, and, in 1971, it reopened with a class of 66 first-year students and 33 third-year students. First-year class size reached its projected maximum of 120 in 1976.
- The College of Nursing represents a combined heritage dating back to the late nineteenth century when its first antecedent, the St. Luke's Hospital Training School of Nursing, opened in 1885 to offer diploma education to nurses. In 1903, the Presbyterian Hospital School of Nursing accepted its first students and, from 1956 to 1968, nurses were taught at the merged Presbyterian-St.

Luke's Hospital School of Nursing. Before the establishment of the College of Nursing in 1972, more than 7,000 nurses had graduated from these three schools. Currently, approximately 200 baccalaureate, master's and doctoral nursing students graduate each year.

- The College of Health Sciences, established in 1975, traces its origins to the School of Medical Technology sponsored by Presbyterian-St. Luke's Hospital from 1959 to 1972. This school was the second largest of its kind in the city of Chicago. During its operation, it provided a one-year professional internship program to more than 200 baccalaureate students in medical technology. Today, the College of Health Sciences offers six programs at the master's level in addition to the bachelor's program in medical technology.
- The Graduate College was established as a separate academic unit in January, 1981, having previously been organized as the Graduate School within the College of Health Sciences. The Graduate College has six degree programs at the doctoral level in the basic science disciplines.

The Philosophy

The University was established in response to demands for a more effective and humane health care system that could supersede highly specialized, fragmented and often geographically inaccessible patient care services. The Rush System for Health, the conceptual framework adopted to address these problems, offers a prototype that could become a model for the delivery of health care in this country.

This system is unique in many ways. A central concept is that the academic and care elements of health delivery systems must be united. The implementation of this concept differentiates Rush from many typical health universities. First, at the foundation of the University is an outstanding patient care setting. Presbyterian-St. Luke's Hospital is recognized as one of the top 20 hospitals in the country. Its existence as a high quality patient care institution made the development of the University feasible. Most faculty and students have clinical responsibilities in this setting or in one of the institutions linked to Rush-Presbyterian-St. Luke's Medical Center. Therefore, faculty function both as clinicians and as teachers. This combination ensures that faculty members

bring up-to-date knowledge to the clinical setting while transmitting professional expertise in the classroom.

Another distinctive feature of Rush University is its commitment to health maintenance and illness prevention. Traditional approaches to health care delivery are based on giving care to the seriously ill. Today, only about 12 percent of the population require such care. At Rush the focus in the classroom is on pathology and prevention of disease. This is supplemented by clinical experiences and home and site visits at traditional hospitals and Mile Square Health Center.

Programs of Study

Rush University confers the bachelor of science (B.S.), master of science (M.S.), doctor of nursing science (D.N.Sc.), doctor of medicine (M.D.) and doctor of philosophy (Ph.D.) degrees. Within the undergraduate nursing program, an RN completion option meets the needs of registered nurses for a university education. Both baccalaureate programs (nursing and medical technology) begin in the junior year of study after completion of two years of course work at other accredited colleges or universities.

Master of science programs are offered by the College of Nursing and the College of Health Sciences. The College of Nursing has concentrations in anesthesia, community health, gerontology, medical/surgical, oncology, parent/child health, psychiatry/mental health and rehabilitation. In the College of Health Sciences, a student may major in audiology, speech-language pathology, clinical nutrition, health systems management, occupational therapy and medical physics.

Doctoral programs include the doctor of nursing science, doctor of medicine and the doctor of philosophy. Students in The Graduate College may concentrate in anatomical sciences, biochemistry, immunology, pharmacology, physiology or psychology. A number of students enroll in concurrent M.D./Ph.D. or D.N.Sc./Ph.D. programs.

Equal Opportunity Policy

Rush University encourages and gives full consideration to all applicants for admission and financial aid regardless of race, sex, religion, color, national origin, age, or handicap. The University is committed to attracting candidates who will help to make the population of

health care professionals more representative of the national population. Beverly B. Huckman, equal opportunity coordinator for academic affairs, has been designated as the University's coordinator for the implementation of these policies.

Research

Research expenditures totaled more than \$10 million last year. The Medical Center encourages investigation of both the normal and disease processes and the distribution of the delivery of health care services. The faculty believes that inquiry into these areas by students should be encouraged if they are to become practicing professionals who will continue to learn throughout their careers. All research studies conducted at Rush-Presbyterian-St. Luke's Medical Center are listed in a research report published annually by the Office of Research Administration.

Accreditation

Rush University is fully accredited by the North Central Association of Colleges and Schools, the regional accrediting association. Rush Medical College is accredited by the Liaison Committee on Medical Education. The College of Nursing is accredited by the National League for Nursing. The anesthesia nursing program is accredited by the Council on Accreditation of Educational Programs for Nurse Anesthesia. The medical technology program is accredited by the American Medical Association's Committee on Allied Health Education and Accreditation.

Approvals

Joint Commission on Accreditation of Hospitals
Liaison Committee on Graduate Medical Education
Liaison Committee on Medical Education
American Medical Association for Residencies for Physicians
Department of Registration and Education
State of Illinois
North Central Association of Colleges and Schools
National League for Nursing
American Nurses Association for the Continuing Education Program

Council on Accreditation of Educational Programs for Nurse Anesthesia
American Medical Association's Committee on Allied Health Education and Accreditation

Licenses

Department of Public Health, State of Illinois
Cook County Board of Health

Memberships

American Hospital Association
Illinois Hospital Association
Chicago Hospital Council
American Association of Colleges of Nursing
Blue Cross/Blue Shield Health Care Service Corporation
Association of American Medical Colleges

Student Characteristics
1982-83

Enrollment

Rush Medical College	517
College of Nursing	
Undergraduate	272
Master's	137
Doctoral	34
College of Health Sciences	
Undergraduate	28
Master's	64
The Graduate College	27
Unclassified	67
Total	1,146

Sex

Men Women

Rush Medical College	353	164
College of Nursing	27	416
College of Health Sciences	17	75
The Graduate College	13	14
Unclassified Students	21	46
Total	431	715

Race

Percent

Caucasian	85.0
Black	6.9
Oriental	4.8
Hispanic	2.0
Other	1.3

Status

	Full-time	Part-time
Undergraduate	279	21
Master's	92	109
D.N.Sc., Ph.D.	39	22
Medicine	517	0
Unclassified	11	56
Total	938	208

Age

	Median	Range
Undergraduate	22	19-51
Graduate		
Medicine	24	18-38
Nursing	27	22-50
Health Sciences	24	21-47
The Graduate College	26	22-35

Geographical Background

Students come from 36 states and United States territories; 11 are foreign students. Of the students who matriculated in the 1982-83 school year, 80 percent were from Illinois.

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Alumni Relations

The Office of Alumni Relations is located in Room 940 Schweppe-Sprague Hall. It has been established to provide a planned, coordinated program of services and activities of mutual interest and benefit to Rush University, the Medical Center, and all alumni.

Although Rush University, founded in 1972, is a relatively young institution, it has already conferred approximately 2,670 degrees in the health professions since its inception and continues its dynamic growth.

The objectives of the alumni relations office are to provide channels for alumni of Rush Medical College, the College of Nursing, the College of Health Sciences, The Graduate College, and the House Staff to:

- Remain informed of current developments at the Medical Center.
- Develop an active interest in and involvement with their alma mater.
- Maintain contact with fellow alumni and faculty.
- Take advantage of continuing education opportunities offered through Rush University.
- Respond positively through both financial and philosophical support.
- Promote and perpetuate the high standards of excellence in patient care, education, and scientific advancement consistent with the objectives of Rush-Presbyterian-St. Luke's Medical Center.

Formally organized alumni associations exist for graduates of nursing programs and for Rush Medical College. As the numbers of alumni increase from the other colleges, organizational efforts will be undertaken for them as well. For more information concerning membership in one of the existing alumni associations or services available through the alumni relations office, call 942-7164.

Alumni Associations

College of Nursing

The Rush Presbyterian-St. Luke's Nurses Alumni Association is an active organization with the following goals: to unite the graduates of Rush University College of Nursing, Presbyterian-St. Luke's Hospital School of Nursing, Presbyterian Hospital School of Nursing, and St. Luke's Hospital School of Nursing for mutual assistance, protection, and preservation of fellowship; to promote the professional and educational advancement of nursing; and to

support the interests of the Rush University programs in nursing.

Over 2,000 graduates of these schools of nursing are active members of the alumni association. Each year, graduates return at homecoming to tour the facilities and to learn what is happening at the Medical Center. From 1887 through 1968 there were 7,221 graduates of the diploma programs of the various schools. Many of them have served with distinction around the world. Since the foundation of the College of Nursing in 1972, Rush University has conferred 1,393 nursing degrees.

Many alumni support the Rush University nursing programs financially through the Golden Lamp Society, which provides gifts to the college.

The association also gives an annual award to the outstanding graduate of the College of Nursing.

Rush Medical College

The Alumni Association of Rush Medical College is an active organization dedicated to supporting the educational goals of the college. Purposes of the organization are: to maintain communications between alumni and the college; to honor alumni who have given distinguished service to the profession of medicine and/or to their alma mater; to promote and encourage the highest standards of medical education; to assist the faculty and staff of the college in any way possible; and to provide financial support for the operation of Rush Medical College.

Prior to its reactivation in 1969, Rush Medical College conferred 10,976 M.D. degrees. Alumni and Trustees of the Medical Center were responsible for keeping alive the original charter granted to the college by the State of Illinois in 1837. The alumni also maintained the Rush Medical College Library and made financial grants for postgraduate education during the college's inactive period. Rush alumni practice in all 50 states and in 11 foreign countries. Since the reactivation of Rush Medical College in 1969, Rush University has conferred more than 1,000 doctor of medicine degrees.

The alumni association is represented on the Board of Trustees of Rush-Presbyterian-St. Luke's Medical Center by four alumni who are elected annually, one of whom is president of the alumni association.

College of Health Sciences— Health Systems Management

The Department of Health Systems Management actively supports the job-seeking efforts of its graduates. An annual meeting for alumni of this program is held the same week as the Rush Invitational Seminar.

Biomedical Communications

The Department of Biomedical Communications provides media production and technical services for patient care, education and research. Offices are located on the fourth floor of the Academic Facility with the exception of the communications skills center which is on the fifth floor.

The department includes eight sections.

- Communication development and design staff works with faculty to develop effective instructional programs and presentations with media; it also offers University courses in instructional design and media production.
- Communication skills center provides an area for faculty and students to conduct interviews and research projects, and practice communication techniques.
- Electronic engineering personnel design the technical aspects of media systems and also operate, maintain and repair media equipment.
- Media production staff develops instructional programs and presentations in television and multimedia formats, providing a full range of services, including needs assessment, budgeting, planning and program production.
- Media services offers assistance to users of audiovisual equipment and other media materials for classes, meetings or individual instruction. Work-study positions are available.
- Medical illustration services range from realistic drawings for use in anatomy or surgery courses to visual clarification of an abstract idea. This section also renders charts and graphs, does graphic art and produces exhibits.
- Medical photography staff produces photographic prints, slides, transparencies, photomicrographs and motion pictures for national and international publications and conferences as well as classes.

- Rush Television Network is an educational/informational internal television system that has two major foci. First, the Professional Education Network (PEN) provides support for continuing education, in-service training and classroom activities. Second, the Patient Information Network (PIN) provides two free television channels for all hospital patients. These channels offer general information, health education programs, instruction in personal health care, chapel services and various types of entertainment. Additionally, the departments of obstetrics and pediatrics each have separate channels for their specialized programs.

The Campus

The Medical Center now consists of 22 buildings on the 33-acre main campus and Sheridan Road Hospital on the north side of Chicago. The main campus includes patient care, education and research facilities. Many of the buildings are connected by bridges or tunnels that permit inside travel to most facilities. Classrooms are located in the Academic Facility, Schweppe-Sprague Hall, and on the twelfth floor of Jelke SouthCenter. Various other buildings have conference and seminar rooms. Specialized research laboratories are located primarily in Jelke as well as in Rawson, the Academic Facility and Schweppe-Sprague.

Student life is centered in the Academic Facility and Schweppe-Sprague Hall. A few student dorm rooms are in Schweppe. The first floor houses the registrar, bursar, Office of Student Financial Aid, Office of Student Affairs and a large auditorium where most large group student cocurricular events are held.

The Rush University Bookstore is on the first floor of the Academic Facility and the Medical Center cafeteria is on the second.

Program offices are in several locations.

- The Office of Medical Student Programs is on the fifth level of the Academic Facility.
- Nursing students and related health students (medical technology, audiology, clinical nutrition, occupational therapy, medical physics and speech-language pathology) will find their program directors on the fourth floor of Schweppe.
- Health systems management departmental offices are on 12 Jelke.

- Students in The Graduate College will locate their division directors in Jelke and the Academic Facility.

The Office of Student Affairs distributes a campus map to new students and publishes a student handbook annually. The handbook includes a yellow pages section that provides locations and telephone numbers of persons, offices, departments and buildings of interest to students.

Computer Based Education

A leader in utilizing computers in health care education, Rush University continues to improve and increase its computer options. By spring of 1983, Rush University students, faculty and staff were spending 2,400 hours a month on computer based education's PLATO terminals. They were also exploring business and educational microcomputer applications on the office's Apple III, IBM PC and CDC CD-110 microcomputers.

The computer based education classroom contains PLATO terminals with access to a screen printer for copies of electronic notes and the results of statistical analyses and self-assessment tests. Videodisc players located in the classroom may be used under computer control or as self-contained educational resources.

Most objective tests given at Rush are computer graded and analyzed for faculty members by the Computerized Test Grading Service.

A computer based instruction summer development program provides opportunities for students and faculty to become involved with instructional computing. The Office of Computer Based Education (CBE) hires students, teaches them to program and matches them with faculty who want to use computers in their courses. CBE provides instructional design and programming support. This program gives students the opportunity to work closely with faculty while reviewing curricular material. During the first three years of the program, the faculty developed a library of more than 30 hours of computer based instruction along with a wide range of computerized self-assessment test banks. Faculty in nursing, medicine and related health programs are actively involved in both development and use of this existing material.

In cooperation with the Data Center, CBE maintains the Computer Communication Ex-

change at the entrance to the CBE office on the fourth level of the Academic Facility. The exchange contains magazines, books, product reviews, access to off- and on-line bulletin boards, and contact with other Rush computer users through Rush Users Group (RUG).

Other CBE activities include:

- Students may discuss issues, spin tales and announce future events in "Rushtalk," a PLATO notefile for students.
- The Student Counseling Center gives electronic advice.
- Students have access to word processing for theses.
- Students may access electronic games on PLATO late at night.
- Hundreds of computer based, health care instructional lessons are available at all times.

Continuing Education

The University Office of Continuing Education annually sponsors more than 30 medical, nursing and health sciences symposia, workshops and conferences for practicing professionals. Students may register at reduced rates for most Rush-sponsored programs.

The five-person staff provides the following services to faculty and staff of the University and Medical Center: consultation in planning meetings; budget preparation; and marketing, which includes strategy and brochure development, printing, maintaining mailing lists, mail house selection and advertising. A computerized registration system maintains attendee records, confirmation letters and attendance lists. For each meeting, the office prepares name tags and certificates of completion.

All programs are supervised by an experienced meeting planner who directs the marketing activities, orders all supplies and audiovisual equipment and is on site during the program to assure its smooth operation. After the program concludes, the meeting planner prepares a computerized program evaluation, a complete financial report and detailed marketing and registration summaries.

The office is located in room 599, Academic Facility. Information regarding services and future programs can be obtained by calling 942-7119.

Counseling Services

Open all year, the Student Counseling Center provides professional counseling, at no charge to students, for a variety of concerns ranging from academic problems to issues of personal development. Students have sought help for test anxiety, insomnia, study difficulties, career questions, eating disorders, parenting concerns, general anxiety, depression, and marital and/or relationship problems with family, peers and faculty. In addition to individual and couple counseling, the center offers group and workshop experiences. Recent workshops for students focused on compulsive eating problems, assertiveness training in medical clerkship situations and support groups for male nursing students and first-year medical students.

Another important service of the center is its peer counseling program. Peer counselors are students who are available to talk to any student in person, by telephone or via the PLATO computer system. Students volunteer to receive training in basic counseling skills during September each year. This peer counseling group, which usually comprises 30-35 students from all colleges, meets regularly throughout the year for educational and social purposes.

The Student Counseling Center maintains strict standards of privacy and confidentiality. No information on an individual student is released to anyone, inside or outside of the University, without the prior consent of the student. No student contact with the counseling center becomes a part of any other University record.

The office is located on the eighth floor of Schweppe-Sprague Hall.

Curriculum Development and Evaluation

The Office of Curriculum Development and Evaluation offers University courses in measurement, evaluation and curriculum design, some of which may be taken independently. Office staff consults and lectures in areas related to curriculum planning and educational evaluation. Students, faculty and staff are invited to contact the office for advice on design and execution of research studies or for assistance in one of the following areas:

- Curriculum and instructional development, which includes activities such as refinement of objectives and syllabi, development of

instructional strategies and description of the instructional domain.

- Evaluative study of educational programs, which includes participant/observer course evaluation, test development, computerized test item generation, comparison of instructional strategies and faculty development.
- Research planning and implementation, which includes research design, questionnaire development, survey design, design of sampling plans, instrument validation, statistical analysis and interpretation of results.

Office staff consults in the development of proposals for education, research and training grants, and it either consults or collaborates in grant-funded studies. Occasionally, staff members conduct research in health care education with professionals outside of Rush University.

General Educational Resources

The Office of General Educational Resources (GER) is responsible for providing students, faculty and staff with a wide range of services necessary for carrying out both laboratory and classroom instruction. GER's management of the spacious, flexible facilities located on the seventh floor of the Academic Facility enables it to meet multiple needs for educational space, equipment, and other support. In addition, GER manages the flexible classrooms located at the south end of the seventh floor and also operates the Quick Copy Center. The multidisciplinary laboratory complex consists of ten laboratory/classrooms, eight support rooms and a central core demonstration area. Within the area are the electron microscope facilities and a small darkroom for scientific use by faculty and students. GER staff offers cardiopulmonary resuscitation and basic life-support training for individuals and groups. The office is responsible for provision of microscopes and other scientific equipment for educational uses, including the microscope rental program for students.

The Quick Copy Center, located on the seventh floor of the Academic Facility, duplicates materials for educational purposes as well as general needs. A full range of services, including front and back copying, some illustration services, and multiple binding types are offered through the center. Special rates are available to students for note cooperatives and for other student copying needs. Personal

work of over ten copies can be accommodated at special rates for faculty and students.

Students and faculty who have instructional needs which require special accommodations should check with the director of general education resources for assistance. GER space is routinely open 50 hours during the week for planned classes and for study. Teaching and learning aids, such as microscopes, can be made available upon request. Classroom space is usually open for study purposes from 5:00 p.m. to 8:00 a.m.

Learning Resource Center

The Chauncey and Marion Deering McCormick Learning Resource Center (MLRC), an audiovisual learning facility, houses an audiovisual media collection and provides on-site support equipment for its use. MLRC is designed to encourage independent study and self-enrichment, and to provide access to reserve audiovisual materials. Seven rooms allow large and small group media viewing with either 16mm film, videocassette, videodisc, slide, slide/audiocassette or audiocassette. Additionally, several of the rooms are connected to the Patient Information Network (PIN), the Medical Center's closed-circuit television patient education system. Another room houses 17 individualized slide/audiocassette carrels. MLRC staff is always available during service hours to help with equipment operation.

A primary purpose of MLRC is to acquire audiovisual media for the Medical Center. Acquisition includes purchase, preview, rental and interlibrary loan. The present media collection numbers 3,441 titles and is accessible by a card catalog or an annually revised holdings list. All media in the collection have been previewed and recommended for purchase by faculty. All programs in the collection may be reserved in advance by faculty and students for use within MLRC or elsewhere in the Medical Center.

MLRC provides complete media reference services. The staff assists faculty and students in locating commercially produced media for use within their courses. This service includes consultation with Audiovisuals On-Line (AVLINE), the National Library of Medicine audiovisual data base and consultation of mediographies, media bibliographies from which faculty and students may select titles for preview.

MLRC provides free, portable electric typewriters and portable audiocassette recorders to students for overnight use.

MLRC staff will arrange individual and group orientations to departmental services upon request. Additionally, MLRC sponsors monthly showings of recent films of general interest to health sciences professionals.

Service hours are as follows:

Monday through

Thursday 8:00 a.m.— 11:00 p.m.

Friday 8:00 a.m.— 6:00 p.m.

Saturday 9:00 a.m.— 6:00 p.m.

Sunday 1:00 p.m.— 7:00 p.m.

Hours may be shorter during vacation periods and in summer. MLRC serves as a 24-hour study hall.

Learning Skills Center

The Student Learning Skills Center offers academic counseling to students regarding such topics as time management, test taking, and study techniques. Students are assisted in developing realistic schedules which provide time for study that is integrated with class schedules and with nonstudy activities, especially including those of a social nature. The development of clearly defined tasks and the establishment of priorities for completing these tasks are other dimensions of the time management issue. Counseling support on test taking includes anxiety reduction techniques, strategies for approaching a test as a whole and for answering specific test question formats, and systematic study planning to prepare for a test. Assistance to students regarding study techniques includes strategies for reading textbook assignments, note taking, concept development, synthesizing, organizing and sequencing material and other information processing techniques. Writing skills is another major area of academic support offered. Subskills included are identifying an appropriate topic, using library resources efficiently and effectively, organizing and outlining a paper, and such technical skills as proper citation and the development of reference lists.

The Student Learning Skills Center is intended to supplement the basic academic support provided by individual faculty members who serve as course instructors and as advisors. While referrals from these faculty members are common, students are encouraged to contact the center directly. Most of the work of the center is done with individual students. In addition, however, programs are offered in which learning skills issues are discussed with groups of students or with groups of faculty. For further information, call 942-2111.

Library of Rush University

The Library of Rush University, the oldest health sciences library in Chicago, serves the entire University and Medical Center. The collection of 44,651 books and 43,950 bound serial volumes is supplemented by outstanding rare book and special collections. An attractively furnished two-story area, the library has large, easy chairs, bench-type sofas and carrels or tables for studying or light reading.

A staff of 10 professional librarians and 16 technical personnel are available to assist library patrons. Guided tours and an orientation to the library are available on request. A slide/tape presentation helps to orient individuals and groups, as do the *Library Guide* and fact sheets that describe library services.

Two frequently requested services are access to the reserve book collection and reference assistance. All reserve books are in closed stacks behind the circulation desk. Another set of self-serve textbooks on reserve are located on the upper floor of the library.

Reference librarians provide assistance in locating and obtaining information or particular publications, often with the aid of a computer. The computer will identify and print the bibliographic reference(s) needed, usually within several days. A literature search of more than 100 bibliographic data bases is possible although the librarian may suggest searching only a few of them. In certain cross-disciplinary subject areas, relevant citations may be retrieved from one data base but not from others. There is a charge for computer connect-time and for the printout of bibliographic references. These rates, which vary by data base, are listed in the reference office.

To obtain access to materials that it does not own, the library participates in several networks of health sciences, public, special and academic libraries in Illinois and in the Midwest, plus networks that access the collections of the National Library of Medicine in Washington, D.C., and the British Library Lending Division in Boston Spa, England. This service is available by completing an inter-library loan form or consulting the interlibrary loan librarian.

Criteria for the purchase of new books and journals are contained in the *Collection Development Manual* which is continually revised to reflect changing patient care, teaching and research activities of the Medical Center. Suggestions for redefinition of these criteria or for specific new purchases are always welcome. Copies of the manual are available in the

library's collection development office.

A monthly publication, *PULSE*, provides library news and lists new books and journal subscriptions. Free copies are available or patrons may be placed on a mailing list. Printouts of all journals held by the library are available in the serials department.

The library is open 92 hours a week with slightly reduced hours during the summer and vacation periods and extended hours prior to examination periods.

Student Affairs

The Rush University Office of Student Affairs works to provide an atmosphere that will enhance students' academic experience. The student affairs staff works closely with students, faculty and administration to identify areas of student need and to design and implement programs and policies to meet those needs. The office makes special attempts to sponsor cultural, social and recreational activities that include students from all programs in the University.

Career Development

Each student is assigned an academic advisor who is a member of the faculty. The advisor is knowledgeable about the student's educational program and provides assistance in curriculum selection, academic progression and professional and career development.

Each winter quarter, the Office of Student Affairs sponsors a career fair to acquaint undergraduate students with a variety of job opportunities available at health care institutions. Additionally, the office keeps extensive files of agency brochures, job descriptions and announcements that are available to students throughout the year. Other files contain placement folders for senior undergraduate students that include limited biographical data and any faculty recommendations requested by students. Data from the placement folders will be released only with the prior, written authorization of the student or former student.

Cultural and Social Activities

Representing the entire University, the Student Programming Board (SPB) initiates and sponsors activities of interest to all Rush University students. The major objective of the board is to coordinate the cocurricular life of the Rush student community in conjunction with the University Office of Student Affairs.

In 1982-83, the SPB organized monthly Thank God It's Friday (TGIF) parties, a Mad Pumpkin Ball, square dance, beach party, talent show, Brown Bag Extravaganza lunches, and an ice cream party. Additionally, the SPB organized a film series that included *The Elephant Man*, *Breaker Morant* and *Invasion of the Body Snatchers*, among others. Due to lower rental costs, the 1983-84 film series will include more new releases.

Representation on the Student Programming Board is as follows:

Rush Medical College	four students
College of Nursing	four students
College of Health Sciences	two students
The Graduate College	two students

Chosen by college-wide student elections, membership on the SPB is open to all qualified Rush University students. Students interested in serving on the Student Programming Board or in participating in student activities are encouraged to contact the Office of Student Affairs in 101 Schweppe-Sprague Hall or by calling 942-6302.

Other special events organized by the Office of Student Affairs in 1982-83 included: student picnic for campus residents, student used-book sale, career fair, medical technology career luncheon, a student blood drive, a nursing big sibling program, and a college bowl that included a campus tournament and sponsorship of an invitational tournament for other health professions schools and competition in the regional tournament at Marquette University in Milwaukee, Wisconsin.

Student affairs coordinates a unique cultural arts program to take advantage of the outstanding musical and theater attractions in Chicago. Discount tickets may be purchased through student affairs for metropolitan movie theaters, dramatic plays, Broadway musicals, Hubbard Street Dance Company, the Second City revue, the Chicago Symphony Orchestra University Night Concert Series and other cultural events. A campus student art fair, cosponsored by Rush Medical College, gives students the opportunity to display their art works to the Medical Center community.

Discount tickets to major sports events are also available through the Office of Student Affairs. Periodically, the office receives blocks of tickets to games with the Chicago White Sox, the Chicago Bulls, Chicago Black Hawks and other professional sporting events.

Housing

Students may live in either Kidston House, McCormick House, or on two floors of Schweppe-Sprague Hall. All of these buildings are centrally located within the Medical Center. Individual units range from single occupancy dormitory rooms in Schweppe-Sprague Hall to two-bedroom apartments in McCormick House that accommodate four students. When filled to capacity, current facilities meet the housing needs of more than 25 percent of the total student enrollment.

Application Process. Students applying for admission to a program of study other than medicine receive housing applications as part of the admission process. Incoming medical students receive a housing application from the Rush Medical College Office of Admissions after they have been admitted. Returning students may request a housing application from the Office of Student Affairs, 101 Schweppe-Sprague.

Because on-campus housing is in great demand, the following set of priorities has been adopted by the Office of Student Affairs for assigning students to available units. Students in category number one receive the highest priority followed by those in category number two, etc.

1. Students who wish to retain their present University housing assignment for the following year.
2. Students who wish to change their present University housing assignment to a different unit for the following year.
3. Returning, undergraduate students who would like to move into University housing.
4. Incoming undergraduate students from affiliated colleges.
5. Incoming undergraduate students from nonaffiliated colleges.
6. Medical students coming from the Knox or Grinnell program whose families do not live in the Chicago metropolitan area.
7. Incoming graduate and medical students who do not live in and whose families do not live in the Chicago metropolitan area.
8. Returning graduate and medical students who live in or whose families live in the Chicago metropolitan area.

During 1982-83, students who were accepted into University housing for the first time represented every category.

These priorities will be used as a guide by the Office of Student Affairs when assigning housing. They assume, however, the students will have met all established deadlines regarding the application process. A returning student living in University housing, for example, who fails to submit a housing application for the succeeding year by the published deadline will not retain his/her number one priority. In addition, other factors such as financial need, room availabilities or unique individual circumstances may be considered as exceptions. Thus, the Office of Student Affairs reserves the right to make exceptions to these priorities when extenuating circumstances exist.

As already stated, on-campus housing is in great demand. Consequently, to maximize available space the following configurations will be used in the assignment process:

Schweppe-Sprague	One student
Kidston Single	One student
Kidston Efficiency	One student
Kidston One Bedroom	One student (married couple)
Kidston Two Bedroom	Two students
McCormick One Bedroom	Two students
McCormick Two Bedroom	Three or four students

Notification of acceptance into University housing will be sent by the Office of Student Affairs to each student assigned to on-campus housing. For students who wish to retain or change their housing assignments for the following year, that notification will take place on approximately April 15. Entering students must receive an acceptance for admission before any housing notification will be sent. Notification to entering students will begin approximately May 1.

A lease will accompany each letter of acceptance into University housing. The lease, accompanied by a security deposit of one month's rent, must be signed and returned to the Office of Student Affairs, Room 101 Schweppe-Sprague Hall, 1743 West Harrison Street, Chicago, Illinois 60612, within the time specified in the cover letter and lease. Failure to return the lease and the security deposit within the time specified will result in the loss of the housing assignment. All inquiries regarding housing assignments should be directed to the Office of Student Affairs.

Consolidation Policy. In an effort to maximize the number of on-campus housing spaces available to Rush University students, some consolidation of tenants may occur. This consolidation policy will affect only those students who occupy an apartment by themselves that was originally leased to two or more students. Such a situation can occur when a roommate has left University housing during the course of the academic year.

If consolidation is necessary, the Office of Student Affairs will inform the affected students in writing. At that time the student will have the following options:

- Share an apartment with another student in any building who is also in need of a roommate.
- Find a Rush University student roommate of his/her choice.
- Have the Office of Student Affairs attempt to find a compatible roommate from the available applications.
- Pay the full rent of the apartment.

If the fourth option is chosen, the apartment will become a single accommodation only through the end of the current lease. If the student wishes to renew the lease, the student will have the option of remaining in the apartment with the understanding that he/she will receive a roommate or will be given an opportunity to move to another available apartment.

After all apartments have been consolidated, any available apartments will be offered to students desiring housing. If compatible roommates are not available, the unit may be rented as a single accommodation at the full rental rate of the unit only until the end of the lease. At such time it will revert to multiple occupancy. Again, the student will have the option of remaining in the apartment with the understanding that he/she will receive a roommate or will be given an opportunity to move to another available apartment.

If you have questions concerning the application process, assignment process, or roommate selection, contact the Office of Student Affairs (telephone 942-6302). Questions regarding leases and maintenance should be directed to the Office of Property Management (telephone 942-6474).

Lockers

The University provides lockers for the storage of coats and books. New students receive locker assignments at orientation. Since the Medical Center assumes no responsibility for the loss of personal property from lockers, it is unwise to store valuables, such as purses or tape recorders, in the lockers. Additionally, be aware that all students share lockers. If any difficulties with a locker arise, contact the Office of Student Affairs.

Mailboxes

Campus mail is delivered to student mailboxes located on the seventh floor of the Academic Facility. Since no United States mail is delivered to these mailboxes, arrangements should be made to have all personal mail sent to home addresses.

New students receive mailbox assignments at orientation and should check for mail daily because University personnel distribute dated material through this campus system. Since students are held responsible for meeting deadlines announced in the dated material, students who will be off campus for an extended period of time should make arrangements to have a friend forward campus mail. The Office of Student Affairs is not responsible for mail that accumulates during a student's absence.

Students may obtain interoffice mail envelopes from the Office of Student Affairs. Address the envelopes and either return them to student affairs, the student mail basket at the receptionist's desk in Schweppe-Sprague Hall, or deposit them in the student mailbox located on the northwest wall of the mailroom on the seventh floor of the Academic Facility.

Name Badges

New students receive badges that identify students by name and by program. *Badges should be worn at all times and are required in patient areas.*

Security (1 Jelke) replaces lost badges for \$1. If the replacement is due to a change of name or because the badge itself is faulty, the fee will be waived if the old badge is turned in.

Recreation

Rush University students have the opportunity to utilize several facilities in the area for recreation, relaxation and physical conditioning.

- A jogging track (one-fifth of a mile) surrounds four outdoor tennis courts next to the Atrium Building on the corner of Ashland Avenue and Harrison Street.

- An outdoor fitness cluster by Parcourse is located between the Professional Building and McCormick House. The fitness cluster consists of four series of exercises located in four individual modules—one for stretching and three others that strengthen the major muscle groups. Illustrated panels in the center of the cluster provide detailed instructions.
- Rush University rents the Wood Street Gym for student use. Located two blocks from Rush, this facility includes a gymnasium, exercise room with Tunturi exercycles and locker rooms. In the past, special hours have been reserved for basketball, volleyball and aerobic exercise.
- Rush University students also have an opportunity to use recreation facilities at the University Center campus of the University of Illinois, Chicago. The south wing of the Chicago Circle Center provides space for archery, table tennis, bowling, swimming, billiards, handball, racquetball, tennis, badminton, volleyball, weightlifting and target practice. Students presenting a valid Rush University identification card are eligible for admission at reduced rates. Schedules of the facilities, rates and hours of operation are posted in the Office of Student Affairs at Rush University.

Rush University Day

Rush University Day is an event held each spring for all students and faculty. A committee comprised of representatives from each college and the University plan a wide variety of activities. Events include exhibits, presentations, demonstrations, tours and outdoor games. Classes are cancelled in order to enable students and faculty to participate in Rush University Day.

Student Organizations

Several student organizations are active at Rush. The Office of Student Affairs serves in an advisory capacity to these groups. A complete list of student organizations is available from student affairs. Students interested in establishing a new organization are encouraged to contact student affairs.

Student Representation

Student representation is unique to each college. Class committee and Faculty Council representatives comprise the Student Council of Rush Medical College. The council's purposes are to increase communication among

the four classes and to give students a combined, representative voice on issues that confront them. Elections for Student Council and several standing committees are held each January.

Students in the College of Nursing may serve on the following standing committees: admissions and progression, curriculum, educational resources, faculty development and affirmative action. Student delegates also serve on the

College of Nursing Faculty Senate. Elections take place each fall to fill vacancies.

Students are elected to membership on the College Council in the College of Health Sciences and also serve on committees in individual programs. Students in The Graduate College elect two students to serve on The Graduate College Executive Committee.

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Registration

Registration Process

Each quarter a schedule of classes is published by the Office of the Registrar for the subsequent quarter. Classes are filled on a first-come, first-serve basis according to the following order of priority: continuing students, new students, and unclassified students.

Required Signatures. Registration forms are processed only if the required signatures are obtained. All graduate students and RN completion nursing students must obtain their advisor's signature. Registration for more than 16 or 17 credits requires written approval. The nature of some course offerings may require the instructor's signature in addition.

Registration for Medical Students. Registration for preclinical studies is done administratively except for electives including the minicourse series (BHV 473). Registration for clinical studies is done in the Office of Clinical Curriculum.

Confirmation of Registration. Registration is confirmed on student data sheets which include billing and financial aid information.

Completion of Registration. Registration is complete only when tuition and any other charges for the quarter are paid or satisfactory arrangements for payment are made. Tuition is due on the first day of the quarter. (See section on Financial Affairs.)

Unclassified Students

The applicant for unclassified student status obtains a data sheet, registration form and class schedule from the Office of the Registrar. Both forms must be completed and returned to the Office of the Registrar. The course director's signature on a registration form constitutes approval for registration. The Office of the Registrar will notify the unclassified applicant of his status regarding enrollment in any class.

A student may accumulate no more than 12 quarter hours of academic credit as an unclassified student. These 12 hours, equivalent to a full-time course load, may be taken in one quarter or over a period of time. Registration as an unclassified student which results in more than the maximum number of hours (12) will be permitted if the dean (or his/her designate) of the college offering the course(s) has signed the registration form.

The bursar will charge tuition at the rate applied to graduate students. An activity fee will be assessed quarterly.

Pass/No Pass Option

The class schedule indicates all courses that may be taken pass/no pass. To register to take a course pass/no pass simply put an X in the P-N column on the registration form.

A student deciding to take a course pass/no pass after having initially registered should complete the pass/no pass option form available in the Office of the Registrar. Note that this form may require the signature of the appropriate advisor.

Graduate students in nursing may take no more than 20 percent of their total credits under the pass/no pass option. If a student graduates with 55 quarter hours, he/she may take 11 of them as pass/no pass. If a student graduates with 58 quarter hours, he/she may take 12 hours as pass/no pass.

All elective courses, seminars, and research courses are graded pass/no pass in The Graduate College.

Independent Study

To register for independent study, students should complete the yellow and white independent study contract forms available in the Office of the Registrar. Health systems management students complete the yellow sheet and a separate form available in the health systems management office.

The small yellow sheet must be returned to the Office of the Registrar during registration. It identifies the title of the independent study to be posted on the student transcript, the preceptor's name and office location, and the number of credits for the study. Since this yellow sheet is considered registration for independent study, an advisor's signature is required. All students, including undergraduates, must obtain the appropriate advisor's signature.

The second form is a long white sheet on which the objectives of the study are defined, a plan to meet those objectives is described, etc. This form is the independent study contract. It should be completed and approved by the preceptor, department chairperson, and the program director no later than the first day of the quarter in which the independent study is to be taken. The student's preceptor keeps the contract.

Identification Card

Each student receives an identification card at matriculation. Each term the card is validated at the completion of registration. Registration is complete once satisfactory arrangements have been made for the payment of tuition and fees.

A valid ID card is needed for identification within the Medical Center complex, for use of the library and bookstore, and for admission to some school events.

Lost or stolen identification cards may be replaced at the Office of the Registrar during working hours. The office is open 8:00 a.m. to 4:30 p.m. There is a \$5 fee for this service.

Drop/Add

The only way to change course registration is to complete a drop/add form available in the Office of the Registrar. The official date of the drop/add action is the date that the drop/add form is processed by the Office of the Registrar. Graduate students and RN completion nursing students must obtain the appropriate advisor's signature before the form will be processed. Forms that must be returned for the advisor's signature will be sent through the campus mail.

Medical students wishing to change their clinical schedules must contact the Office of Clinical Curriculum.

Grades and Transcripts

Grading System

Grade	Quality	Grade Points
A	Excellent	4
B	Good	3
C	Satisfactory for undergraduates but may not be acceptable at the graduate level.	2
D	Minimal pass for undergraduates and may not be acceptable at the graduate level in the College of Health Sciences. Not used at the graduate level in the College of Nursing	1
F	Failure	0
P	Passing	—
N	Not Passing	—
H	Honors—Rush Medical College only	—
W	Withdrawal prior to midterm	—
WP	Withdrawal passing after midterm	—
WN/WF	Withdrawal failing after midterm	—
K	Credit earned through proficiency examination	—

NR	Grade not reported by instructor	—
I	Incomplete	
CC	Course continues into the next quarter. Grade received at the end is then recorded for all terms covered by the course.	—
XX	Participation in an ungraded residency or fellowship.	—

Rush Medical College only uses honors (H), pass (P), and fail (F).

Grade Report

Quarterly grade reports are mailed to the student's local home address as soon as grades have been recorded each term. Grades are usually mailed within five working days of the end of the examination period. Grades will not be issued over the phone nor given to students who attempt to pick them up in person.

The quarterly grade report is the student's copy only, and it should not be accepted by an institution or agency in lieu of an official transcript.

Academic Record

The permanent academic record is the student's official transcript that includes all course work taken at Rush University. External transcripts for medical students reflect the highest grade reported for each course at the time a transcript is requested. The academic record is maintained permanently in the Office of the Registrar.

Transcript Requests

Copies of the academic record may be obtained at no cost to the student or former student. These transcripts are released only with prior written consent of the student. Students may either complete a transcript request form or write the Office of the Registrar, 1743 West Harrison Street, Chicago, IL 60612. The letter must include a handwritten signature of the student. Transcripts will not be released if the student has an outstanding financial obligation to the University. Two days should normally be allowed for processing.

Transcript requests by medical students to be used in support of residency applications should be made to the Office of Clinical Curriculum of the medical college rather than the Office of the Registrar.

Copies issued to students will be stamped in red ink "Issued to Student." All copies bear the signature of the registrar or his/her designate and the seal of Rush-Presbyterian-St. Luke's Medical Center.

Commencement

Commencement Ceremony

Rush University commencement is held annually at the end of the spring quarter. The exact date for commencement is published in the academic calendar appearing in class schedules and in the *University Bulletin*. Students will be notified by the Office of Student Affairs concerning participation in the event. Students are expected to march in in commencement exercises.

The Office of the Registrar asks students to specify how they want their names printed on their diplomas and in the commencement program. Students also will be asked to supply a forwarding address where mail can be sent after graduation.

Most students who complete all requirements for the degree by the end of summer quarter are eligible to participate in the commencement ceremony the preceding June. (Information regarding degree requirements, deadlines and eligibility may be obtained from program directors.) Students whose academic plans change, making them ineligible to participate in the June ceremony, will be deleted from the commencement list for that academic year. However, they are then eligible to participate the following June should they successfully meet degree requirements.

During the ceremony, diplomas are given to students who have completed their programs, discharged their financial obligations to the Medical Center, and returned all library books and other University property. Students will be notified of all outstanding obligations, and the Office of the Registrar will encumber the diplomas and transcripts of students until these obligations are met.

Awarding of Degrees

Rush University degrees are granted on the last day of the quarter in which all degree requirements are completed. When degree requirements are met during the break following a quarter, the degree will be dated the end of the subsequent quarter. Degree requirements include all curricular and other program prerequisites, such as required courses, residency, minimum grade point average, cumulative

quarter hours, etc. (See program descriptions for details.) Before a degree may be granted, all grades of incomplete (I) must convert to final grades.

Outstanding financial and other Medical Center obligations have no effect on the awarding of degrees; however, the diploma, student transcript and other notification of a degree awarded will be withheld until these Medical Center obligations have been met.

Graduation Requirements

See program descriptions.

Dual Degree (Undergraduates in nursing and medical technology)

Some affiliated colleges award a bachelor's degree to students who have transferred to Rush University. Students receive the degree after they have met degree requirements of the affiliated college. Often those requirements have been modified slightly to accommodate the unique nature of the affiliated-Rush program. Questions regarding degree requirements and eligibility should be directed to the registrar of the affiliated college.

To receive a degree from the affiliated college, each student must authorize the registrar of Rush University to send an official transcript of Rush course work to the affiliated college.

Graduation Honors

Candidates for the bachelor of science degree who have demonstrated academic excellence are honored at commencement by the Rush University faculty. Those earning a 3.4 or better grade point average based on six quarters at Rush are awarded the bachelor of science *cum laude*; those with 3.6 or better, *magna cum laude*; those with 3.8 or better, *summa cum laude*. Only Rush University course work is calculated into the grade point average. Honors appear on the student's diploma and are announced during the commencement ceremony.

Prizes and Awards

The following prizes and awards are given annually at the Rush University Honors ceremony.

The Nathan M. Freer Prize

This prize, endowed in 1892, is given to the outstanding senior medical student as voted by the faculty.

The Henry M. Lyman Memorial Prize

Endowed in 1908, this prize is given to a junior medical student for outstanding work.

The David Peck Prize

This prize is awarded to the student who has made the greatest contribution to the Student National Medical Association.

The Lemmon Company Student Award

This award is given to the graduating medical student who has excelled in the study of obstetrics and gynecology as demonstrated by excellence in scholarship and concern for patients.

The Sir William Osler Pathology Prize

This prize is given to the medical student who has demonstrated outstanding achievement in diagnostic or experimental pathology.

The Undergraduate Cardiology Award

This award is given to the graduating medical student who has had the best performance in a cardiology elective course.

Rush-Presbyterian-St. Luke's Nurses Alumni Association Award

This award is given to the outstanding graduating nursing student.

College of Nursing Dean's Award to Undergraduate Student

This award is given for superior academic leadership in the undergraduate nursing program.

The College of Nursing Dean's Award to Graduate Student

This award is given for superior academic leadership in the graduate nursing program.

The Kellogg Scholarship Award to Doctoral Nursing Student

This award is given for superior academic achievement in the doctoral nursing program.

College of Health Sciences Dean's Award to Undergraduate Student

This award is given to the outstanding undergraduate student as selected by the faculty.

Medical Technology Faculty Award to Undergraduate Student

This award is given for outstanding academic performance by an undergraduate student.

College of Health Sciences Dean's Award to Graduate Student

This award is given to the outstanding graduate student as selected by the faculty.

The Graduate College Award

This award is given for excellence in research among students enrolled in The Graduate College.

The Graduate College Faculty Award

This award is given to the outstanding teacher on the faculty as selected by the students.

The Aesculapius Award

This award is given to the outstanding resident-physician as voted by the medical students.

The Daniel Brainard Award

This award is given to the outstanding teacher in the basic sciences as voted by the medical students.

The Phoenix Award

This award is given to the outstanding physician-teacher as voted by the medical students.

College of Nursing Undergraduate Faculty Award

This award is given to the outstanding faculty member as voted by the senior students.

College of Health Sciences Faculty Award

This award is given to the outstanding teacher on the faculty as selected by the students.

Student Records

Name and Address Change

The Office of the Registrar maintains the current official listing of student names and addresses for Rush University. It is the responsibility of the student to keep the Office of the Registrar informed of changes in this information. A name/address change form is available in the Office of the Registrar. A copy of this form is automatically distributed to the bursar, Office of Student Financial Aid, Library of Rush University, and the Office of Student Affairs.

Directory Information Policy

Certain information classified by Rush University as directory information may be disclosed to the public. These are items of directory information: student's full name, local address and phone number, date and place of birth, home town, major field of study, year in school or class, participation in officially recognized activities, dates of attendance, degrees and awards received, previous educational institutions attended, previous majors, previous degrees and dates earned.

Each fall quarter the *Rush University Student Address Book* is published for student, faculty and staff use. It contains the student's name, local address and phone number, college and class.

At the time of commencement exercises this information may be released in public announcements: student's full name, degree and major, previous institution and degree(s) and year(s) earned, and home town.

Students may restrict the release of any item of information considered as directory information on a form provided in the Office of the Registrar, 1 Schweppe-Sprague, by Friday of the first week of classes in each quarter.

Student Records Policy

The Family Educational Rights and Privacy Act of 1974 protects the privacy of current and former students enrolled in most educational institutions. Rush University has seven official student records. A student or former student may inspect and review these records after making an appointment with the appropriate office. The records and their locations are as follows:

- Official academic record (transcript)—Office of the Registrar, 1 Schweppe-Sprague.
- Registrar's folder: Contains admission application, transcripts from other schools, registration information—Office of the Registrar, 1 Schweppe-Sprague.
- Dean's folder: Contains written evaluations of clinical work, curricular flow charts, grade reports—Office of Clinical Curriculum, 5 Academic Facility (Rush Medical College); Office of the Program Directors, 4 Schweppe-Sprague (College of Nursing)
- Department folder: Contains written evaluation of clinical work, curricular flow charts, grade report copies—Office of the Program Directors, clinical nutrition, medical physics, medical technology, occupational therapy, and speech and hearing sciences—4 Schweppe-Sprague; religion and health—7 Schweppe-Sprague; health systems management—12 Jelke; The Graduate College Admissions Office, 4 Academic Facility.
- Financial affairs folder—Records showing all billing and payments, notes and correspondence dealing with a student's finances—Office of Student Financial Affairs, 1 Schweppe-Sprague.
- Financial aid folder: All information concerning financial aid for the student—Office of Student Financial Aid, 1 Schweppe-Sprague.
- Placement recommendations: Contains letters of recommendation filed by faculty

members at the request of the student—Office of Student Affairs, 1 Schweppe-Sprague.

Students may obtain copies of transcripts from the institution that holds the original records. Other portions of their records will be copied upon request. The request must be in writing and signed, must specifically identify the record desired and include the student's major, year, date of birth and Social Security number. There is no charge for copies of the student transcript. Other reproductions cost 50 cents per page. The University honors requests providing there is no outstanding obligation to the Medical Center. Students within commuting distance may be asked to review the desired data in person.

Students may request that the University amend information in their records they believe to be inaccurate, misleading or in violation of their privacy. If the University refuses to amend the records, the student may request a hearing to challenge that decision. A hearing will be granted. Students may place in their educational records comments upon information in the records and/or state their grievances with a decision not to amend the record.

Administrators who maintain the records adhere to a policy of limited access to administrators and faculty of Rush University who have a need for information in order for their offices to function, to determine academic progress or to designate award recipients. Other persons or organizations given access are those responsible for accrediting the institution, for providing the student with financial aid, for complying with a judicial court order and for protecting the health or safety of students during an emergency.

Disclosure of any student's record to others not listed in these policies must have prior written consent of the student. Requests for information and letters of consent are kept with the records.

Human Investigation

Any project or study involving human subjects must have approval of the Medical Center Committee on Human Investigation. Studies in the community as well as within the Medical Center must have this approval. The Office of Research Administration handles all requests and has established the protocol for proper investigative procedures.

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Tuition and Fees

Tuition

Tuition and fees* for the 1983-84 academic year are as follows:

	Full-time (Per Quarter)	Part-time (1-11 Hrs.) (Per Quarter Hr.)
Rush Medical College	\$3,780	
College of Nursing		
Undergraduate	1,570	\$135
Graduate	1,840	155
College of Health Sciences		
Undergraduate	1,570	135
Graduate	1,840	155
The Graduate College	1,840	155

Medical students are assessed tuition uniformly at the beginning of fall, winter and spring terms. Therefore, irrespective of the enrollment pattern in clerkships, the tuition charge is standardized such that payment for three quarters is due each year.

Fees

Activity Fee	\$10 per quarter (excluding summer)
Enrollment Fee	\$75 (for students in special programs)

Activity Fee. Nonrefundable activity fee of \$10 is assessed in the fall, winter, and spring quarters. This fee includes publishing of the student newsletter, *The Rush Reporter*, movies, dances, parties, game room, and other student activities administered by the Office of Student Affairs.

Enrollment Fee. Students enrolled in a non-credit residency or academic enrichment program prior to receipt of their degree must be registered for such a course and pay the enrollment fee in order to retain their student status. Single insurance is not covered in this fee while enrolled. Single coverage under ANCHOR is provided at no extra charge (see Student Health Services Program for additional information).

Insurance. All students must have hospitalization coverage. (See Student Health Services Program for further information.)

Application Fee. A nonrefundable application fee of \$25 is required of all applicants to offset the expense of processing the application,

evaluating credentials and maintaining a library of evaluation aids.

Readmission Fee. Students who have withdrawn or been dismissed from a program must pay a nonrefundable \$30 readmission fee. This fee helps offset the processing of the application for reenrollment, evaluation of credentials and committee review and deliberation time.

Enrollment Deposit: (Colleges of Nursing and Health Sciences): A \$50 enrollment deposit is required of all students (including affiliated students) prior to matriculation. This assures a place in the entering class. This deposit is nonrefundable and applies toward payment of the first quarter tuition.

Microscope Rental. Microscopes are available to students for a rental fee which covers repairs or replacement as well as administration of the rental program.

Returned Checks. If a student gives the University a check that is returned by the bank upon which it was drawn, marked "not sufficient funds," "payment stopped" or "account closed," a \$5 charge will be assessed for each occurrence.

Payment for Tuition, Fees and On-campus Housing

The following statement represents the payment policy for all Rush University students:

Payment for tuition, fees and on-campus housing, or satisfactory arrangements for payment, must be made with the Office of Student Financial Affairs before registration is complete. Students may not attend classes until after registration is complete. Any exception to this policy must be approved in writing by the dean for academic support services. Students enrolled in first-year courses at Knox College will be billed for tuition by Rush University.

Students have the responsibility to complete one or a combination of the following courses of action on or before the first day of classes of each quarter:

- Pay total tuition, fees and on-campus housing charges for the quarter.
- Complete a Deferred Payment Plan Contract. This plan requires that one-third tuition, all fees, and a \$15 service charge be paid on or before the first day of class. Additional payments of one-third are due on the

*For estimates of other expenses—see the *Student Financial Aid Handbook*.

fourth and eighth Mondays of the quarter. Contract forms are available in the Office of Student Financial Affairs.

- Complete a Financial Aid Late Payment Form. This form, initiated by the student and completed by the Office of Student Financial Aid, is to be filed when the student is receiving external aid that has not arrived at the University by the beginning of the term. This would occur, for example, when a guaranteed loan is needed to pay tuition and the proceeds from the bank have not been received by the beginning of the quarter. For that portion of tuition and fees not covered by this external aid, the student must complete one of the above steps for the remaining amount. Forms are available in the Office of Student Financial Aid.

Those students who have not made satisfactory arrangements will be given notice by mail during the second week of classes that they are delinquent in their financial obligations to the University. The notification will inform the students that they have until Friday of the third week of classes to satisfy all such financial obligations. On Monday of the fourth week of classes, those students who have not made satisfactory arrangements will be notified that their registration has been cancelled for the quarter.

Students who choose the Deferred Payment Plan Contract and who fail to make a payment on the specified due dates will have notification mailed to them on Monday of the following week that they are delinquent in their financial obligations to Rush University. The notice will inform those students that they have until Friday of that week to satisfy their financial obligations without penalty and that failure to do so will result in the cancellation of their registration for the quarter.

On Monday of the following week all students remaining delinquent under the Deferred Payment Plan will receive final notice that they have been dismissed and that their dismissal has resulted in forfeiture of all payments made.

Any student dismissed under this policy will:

- Be covered by Anchor/Blue Cross for the remainder of the quarter if the appropriate fees have been paid.
- Be dismissed from on-campus student housing.
- Lose library, MLRC, locker and mail privileges.

Students who are reinstated by decision of the dean for academic support services will pay a reregistration fee of \$30.

Students who wish to reenroll the following quarter or year should contact the registrar of Rush University.

Refund Policy

Official withdrawal or dismissal from a course or from the University entitles a student to a refund of tuition according to the schedule listed below. No fees are refundable.

A student may receive a 100 percent refund if withdrawal occurs during the first calendar week in which the quarter begins. Otherwise, refunds will be made as follows:

Second week—80 percent refund

Third week—60 percent refund

Fourth week—40 percent refund

Fifth week—20 percent refund

After fifth week—no refund

Refunds will be shown as a credit on the student's account unless the student requests a check for the amount of refund less any amount still owed for other charges. Normally, checks are processed within two weeks. Students are not notified when the check is available in the Office of Student Financial Affairs.

Student Health Services Program

The University's health services program is designed to promote the health and well being of its student population and to protect the individual student from undue financial hardships that a medical emergency could cause. To accomplish this the University offers membership in two separate group insurance policies which, when combined, fulfill its goal of student health maintenance and protection.

The first is a group *hospitalization* policy underwritten by Blue Cross covering most of the hospital charges related to an inpatient stay or an emergency room visit. Applications are available at the Office of Student Financial Affairs and at fall registration when all students are required to provide proof of hospitalization coverage or sign up for Rush's Blue Cross Plan. As with all group policies, there is an annual open enrollment period when a subscriber may add dependents or make changes. Rush's Blue Cross enrollment occurs during fall registration, and the only other time a dependent may be added is on the actual date of marriage or the birth of a child. A booklet available at the student financial affairs office explains in more detail the exact coverage and

exclusions. The student financial affairs office is located in 101 Schweppe-Sprague Hall.

Although membership in Rush's Blue Cross policy is not mandatory, it is a requirement that all students carry some hospitalization insurance from their date of matriculation until graduation. Upon entering Rush many students are covered by a family policy; however, all family policies have maximum age limits for children, normally 19 to 23 years of age. As a result, even though a student may be adequately covered upon entering Rush, at some date that coverage will stop. The University has no way of knowing when this will occur; consequently it is the student's responsibility to notify the student financial affairs office prior to that critical birthday so that there will be no lapse in coverage. This is extremely important, as no student should be without hospitalization insurance. During fall registration the student financial affairs office requires that all students provide proof of alternative hospitalization coverage or join Rush's Blue Cross group.

The second group policy available at Rush is the ANCHOR Health Maintenance Organization. ANCHOR offers outpatient primary care aimed at the prevention of illness, maintenance of good health and early detection and treatment of disease. When illness does occur, comprehensive care is provided through ANCHOR's group of primary care physicians and specialists. ANCHOR's benefits cover most physician and related fees including up to 20 outpatient mental health visits per calendar year for short-term evaluation and crisis intervention. Membership in ANCHOR is included in tuition or enrollment fees for Rush students. It is also available during summer quarters and for up to three months after graduation for a separate fee. Every year during fall registration, *all students* must fill out a new ANCHOR application regardless of whether they were covered during the summer or not. As with Blue Cross, fall quarter registration is also the annual

ANCHOR enrollment time at which students can add a spouse or child to their policy. The only other time additions to one's coverage can be made is on the actual date of marriage or birth of a child.

Currently, ANCHOR has nine offices throughout the Chicago area with Saturday hours and some evening hours. When a student first joins, he/she selects a personal physician from among the ANCHOR staff, as well as the office location he/she thinks would be most convenient. Normally, the central office located on the seventh floor of the Professional Building on the main campus will be most convenient. To aid students in their selection of a physician, a current list of participating physicians is available at the student financial affairs office or in any of the nine ANCHOR offices. As with Blue Cross, a booklet explaining in more detail the coverages and services available through ANCHOR is available from the Office of Student Financial Affairs. The telephone number for ANCHOR's central office is 666-7600.

Following are the rates for the 1983-84 academic year for Blue Cross and ANCHOR.

Blue Cross	Per Quarter Including Summer
Single	\$ 73
Family	340

Per Quarter Rates		
ANCHOR	Enrolled	Not Enrolled
Single	\$ —0—	\$ 71
Couple	71	142
Family	175	246

FINANCIAL AID

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Financial Assistance

The financial aid program has been established at Rush University to provide assistance to students who cannot afford to pay the full cost of education through their personal or family resources.

Financial need is the basic criterion for the awarding of funds by Rush University. Accordingly, students and their families will be expected to contribute toward educational expenses to the fullest extent possible. The level of the expected contributions is determined by using a standard set of criteria to analyze financial information provided by the students and their families. If the available resources fall short of meeting budgeted costs, the financial aid office will attempt to award sufficient financial aid to make up the difference.

In addition to the need-based funds, Rush University offers a low cost loan program, Rush-IIHELA Loan, which is available to all students without regard to financial need.

Detailed information on financial aid and the application procedure is provided in the *Rush University Student Financial Aid Handbook*, which is available in the Office of Student Financial Aid. The staff is available to consult with students and parents on all matters regarding the financing of a Rush University education. Students and parents are welcomed and encouraged to make use of these services.

Financial Aid Awards

After evaluating the personal and family resources available to the student, and taking into consideration awards from external sources, the Office of Student Financial Aid will award funds under the control of the University to students who have a remaining unmet need. In varying quantities, a financial aid award may include scholarships/grants, loans, and employment. In order to distribute the available funds in the most equitable manner, the student financial aid office establishes a formula, which designates the sequence in which funds are awarded to students and the maximum amount awarded under each program. The formula provides for a certain amount of loans and sometimes employment before students are given consideration for scholarships. These formulas are applied consistently during any given year among all students at a given class level in a given college, as long as funds are available. Due to differences in the availability of funds from year to

year and changes in eligibility requirements, the formulas are adjusted annually.

Scholarship and Loan Funds

Rush University is grateful to the donors of scholarship funds.

Broda O. Barnes M.D.
Alexander Brunschwig M.D.
RPSLMC Nurses Alumni Association
Carlson-Luckhart
Rush University Faculty Wives Association
Rush University Faculty Women's Association
Clark W. Finnerud M.D.
Eunice Goebel Greeley
Florence D. Hagenah
Philip N. Jones M.D.
George M. Katzman M.D.
Laurel E. Keith M.D.
John L. and Helen Kellogg Foundation
Earl Leimbacher M.D.
Robert Ryan, Jr., M.D.
Searle Scholars Program
Elizabeth Douglas Shorey
Emily Birnie Smith
Charles H. Solomon M.D.
C. M. Swale
RPSLMC Woman's Board

In addition, Rush University has loan funds available through resources provided by various donors.

Abbott Laboratories
Carl O. Almquist M.D.
M. Irene Cavanaugh
Charity Hospital Association
Donald W. Fergusson
George Guibor M.D.
John Jacques M.D. and Lawrence Jacques M.D.
Grace M. Marshall Educational Foundation
Dr. David Monash
Anne M. and Paul J. Patchen M.D. Loan
Frederick Henry Prince
RPSLMC Medical Staff
Simon M. Shubitz M.D.
Rush Medical College Alumni Association
Aileen S. Andrew Foundation
Broda O. and Charlotte W. Barnes
Episcopal Medical Student Loan
Henry H. Everett M.D.
Heyworth and Catherine Sanford
Jane Wheeler Warren
Vivian Weil
RPSLMC Woman's Board

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Division of Cell Biology	87
Division of Immunology	88
Division of Pharmacology	91
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Division of Psychology	100

RUSH MEDICAL COLLEGE

Philosophy

The process of becoming a physician is unique for each student who enters Rush. Each brings to his/her medical school experience a distinct educational, psychological, and social background. As students define career goals, each develops personal ways of coping with the demands imposed by the physician's role. The Rush Medical College curriculum encourages pursuit of individual interests by emphasizing a solid foundation in the basic sciences and by offering a wide range of elective opportunities in the Medical Center and in a network of affiliated and associated hospitals. Throughout the program, students are encouraged to develop habits of self-education and enthusiasm for the lifelong study of medicine according to specific interests and objectives. Upon matriculation, students are assigned academic advisors whose primary responsibilities are to provide guidance and serve as resources for students as they define professional goals, select courses and deal with a variety of issues during their progress through medical school.

Long after students have taken their last medical school examinations, the sense of responsibility for the welfare of one's patients remains the most important stimulus to maintaining the highest level of professional performance. The Rush faculty seeks to provide educational opportunities and to create an environment that will foster the ability to meet these responsibilities with competence and compassion.

Admission Requirements

Selection Process

Rush Medical College is strongly committed to the selection of individuals who will become vital members of the medical community as students, practitioners, educators, and researchers. Throughout the curriculum, emphasis is placed on the preparation of physicians who will function chiefly as medical practitioners and who will be committed to the delivery of quality health care to a variety of populations, including those that are now underserved.

Because Rush seeks to train physicians who will be committed to meeting society's health care needs, the committee seeks excellence in academic achievement and in noncognitive factors such as character, goals, personality,

accomplishments, and experience. High scholastic achievement is only a partial qualification for acceptance. The Committee on Admissions looks for individuals who exhibit social and intellectual maturity, personal integrity, motivation, and concern. Strong preference for admission is given to residents of Illinois.

Admission to Rush Medical College depends upon satisfactory completion of a minimum of 90 semester hours (135 quarter hours) of undergraduate study before matriculation.

Rush requires all entering students to have successfully completed at least two semesters of physics; two semesters of biology, with emphasis in zoology; two semesters of inorganic chemistry; and two semesters of organic chemistry. In lieu of two semesters of organic chemistry, students may take one semester of organic chemistry and one of biochemistry. Survey courses in the premedical sciences will not fulfill these requirements. Courses in mathematics, social sciences, and English are strongly recommended. The committee suggests that comprehensive courses be selected which include study in the following areas: biology—molecular, cellular, developmental, and population; inorganic chemistry—properties of the elements, states of matter, chemical reaction, and aqueous solutions; organic chemistry—stereochemistry, covalent bonding, hydrocarbons, and organic compounds; physics—mechanics, electricity, wave characteristics, thermodynamics, nuclear structure, and optics.

Because the required courses provide the foundation upon which modern biological and medical sciences are built, the committee gives special attention to competence in these areas. The committee requires that all of the course work submitted in fulfillment of specific admissions requirements must be evaluated on the basis of a traditional grading system. Such a system must employ a range of numbers or letters to indicate the comparative level of performance. If the applicant has received a grade of pass/credit for any courses on the required list, he/she must have the instructor supply, in writing, a statement evaluating the student's performance in that course. Applicants are advised to pursue subjects beyond the stated minimums if they have not done excellent work in the required courses.

Applicants who will have successfully completed three years of college consisting of a minimum of 90 semester hours or 135 quarter hours, who have no baccalaureate degree but otherwise meet the requirements, will be considered.

Concurrent M.D./Ph.D. Program

Rush University offers students the opportunity for studies which lead to both M.D. and Ph.D. degrees. These programs are particularly suited for students who aspire to careers in academic medicine and research. They enable students to obtain intensive training in specialized areas of the medical sciences while completing their medical studies.

The curricula for students in a combined M.D./Ph.D. program vary widely depending on the individual's previous education, scope of scientific study, and personal interests.

Students in concurrent programs must meet the full conditions and requirements of The Graduate College and Rush Medical College. However, course work leading to one degree may be acceptable as partial credit toward the formal requirements of the other degree. A properly coordinated program may afford a significant economy of time in completing studies toward both M.D. and Ph.D. degrees.

A student who enters Rush University with concurrent enrollment in a graduate program and the medical college will most typically complete two years of basic science components of the medical college curriculum before becoming fully involved with requirements of the graduate program. Upon completion of the requirements for the Ph.D. degree, the student will return for the clinical portion of the medical program. Alternatives to this schedule are possible to enable students to develop programs which will most effectively satisfy their career objectives.

Ph.D. programs are offered in The Graduate College of Rush University in the following areas: anatomical sciences, biochemistry, immunology, pharmacology, physiology, and psychology.

Curriculum

Organization

The four-year Rush curriculum provides an appropriate background for individuals with a diversity of professional career goals. The curriculum is based on establishing a solid foundation in the basic sciences and clinical

medicine through a core of required preclinical and clinical courses. In addition, there is ample elective time for students to pursue individual interests.

First Year at Medical Center Campus

The primary objective of the first year is to provide students with exposure to the vocabulary and the fundamental concepts upon which the clinical sciences are based. The first year is comprised of three quarters of basic science material organized on a disciplinary basis and emphasizing the structure, function, and behavior of the normal person. The following courses have been designated for each of the three quarters of the first year at the Medical Center.

Curriculum: First Year

Quarter I A—Fall

Course	Hours*
ANA 471 Gross Anatomy I	90
ANA 455 Histology	72
BCH 471 Biochemistry I	40
PHY 451 Physiology I	68
Total	270

Quarter I B—Winter

Course	Hours
ANA 472 Gross Anatomy II	90
BHV 451 Fundamentals of Behavior	43
BCH 472 Biochemistry II	38
PHY 452 Physiology II	63
Total	234

Quarter I C—Spring

Course	Hours
BHV 453 Behavior in the Life Cycle	33
BCH 473 Biochemistry III	33
MIC 451 Microbiology Concepts	58
NEU 451 Neurobiology	72
PVM 451 Preventive Medicine	38
Total	234
Total Hours First Year	738

*Subject to change.

First Year at Knox College

Rush Medical College has a cooperative program with Knox College in Galesburg, Illinois, which enables a group of 16 students to complete the first-year curriculum on the campus of Knox College while enrolled in Rush Medical College. Students obtain basic science training

comparable to that provided to first-year students at the Rush-Presbyterian-St. Luke's Medical Center campus but, in addition, they participate in clinical tutorials which expose them to clinical practice in a small urban community. Students in this program may also take advantage of course offerings in the liberal arts and social sciences.

Knox was chosen to participate in this program because of its demonstrated excellence in the basic sciences, as well as its overall quality as a liberal arts institution. The Knox/Rush program utilizes existing facilities and highly qualified faculty to teach the medical sciences during the transition between undergraduate studies and the more specialized studies of medical education.

The Knox/Rush program was designed with different types of students in mind:

- Students who wish to take advantage of the opportunities available on a liberal arts campus.
- Students who wish to have contact with medicine as it is practiced in a small community.

After completion of the first year at Knox, students come to Rush Medical College at the Rush-Presbyterian-St. Luke's Medical Center campus in Chicago for the remainder of their medical school program.

First-year students at Rush pay the same tuition to Rush Medical College regardless of the campus at which they carry out their studies. Fees for special activities and services may vary for students on different campuses.

Curriculum: First Year at Knox†

Course	Instructional Hours
Biochemistry	50
Biomedical Electronics	20
Biostatistics and Epidemiology	24
Cell Physiology	60
Counseling	50
Embryology	60
Health Service Institutions	34
Histology	60
Human Anatomy I, II and III	170
Medical Microbiology	60
Molecular Genetics	60
Physiology I and II	120
Clinical Tutorial	105
Treatment of Drug Abuse and Alcoholism	10
Total Hours First Year	883

†Subject to change.

Second Year

During the second year, students are concerned with the study of the causes and effects of disease and with therapeutics.

Students who carry out their first year at the Medical Center campus initiate their work with patients in programs which emphasize interviewing, history taking, and the physical examination. Students coming from the Knox and Grinnell* campuses participate in programs which further advance these patient care skills.

Curriculum: Second Year

Quarter II A—Fall

Course	Hours**
PSY 501 Introduction to Psychopathology	33
IMM 501 Immunology	53
PTH 504 Pathology	61
PHR 501 Pharmacology I	48
MED 501 Clinical Pathophysiology I	50
Total	245

Quarter II B—Winter

Course	Hours
BHV 541 Observation and Communication	20
MED 502 Clinical Pathophysiology II	76
CCS 501 Clinical Concepts and Skills	50
PTH 505 Pathology	67
PHR 502 Pharmacology II	46
Total	259

Quarter II C—Spring

Course	Hours
CCS 502 Clinical Concepts and Skills	66
MED 503 Clinical Pathophysiology III	96
PTH 506 Pathology	63
PHR 503 Pharmacology III	19
Total	244
Total Hours Second Year	748

*The first-year program at Grinnell College terminated at the end of the 1982-83 academic year.

**Subject to change.

Third and Fourth Years

The curricula of the third and fourth years provide students with training in clinical skills, diagnosis, and patient management in a variety of patient care settings.

The clinical curriculum includes required core clerkships in family practice, medicine, neurology, pediatrics, psychiatry, obstetrics/

gynecology, and surgery, requiring a total of 54 weeks. A total of 24 weeks of elective study in areas of special interest to each student is also required.

With few exceptions, the required core clerkships are taken at Rush-Presbyterian-St. Luke's Medical Center, Christ Hospital, or Mount Sinai Hospital Medical Center. Twelve of the 24 weeks of required elective work must be carried out at Rush-Presbyterian-St. Luke's Medical Center or at one of the affiliated or associated hospitals within the Rush health care network. Up to 12 weeks of additional elective study may be carried out at other approved institutions.

Though scheduling of required core clerkships is somewhat flexible, students are encouraged to complete these clerkships early in order to make better use of elective options in the fourth year. Students participate in assignment of required core clerkships although the final decision concerning core and elective clerkship rotations rests with the Office of the Dean.

Academic Progression

Evaluation of progress at the medical college is an important part of the learning process. Course examinations developed and given by the faculty are aimed at allowing both the students and the faculty to assess progress toward defined learning goals. The final result of evaluation in course work is recorded as honors, pass, or fail. At the end of each quarter or clinical period, evaluations are submitted to the Office of the Dean and to the Committee on Student Evaluation and Promotion (COSEP).

The Committee on Student Evaluation and Promotion is a standing committee of Rush Medical College. The committee determines when students have satisfactorily completed requirements for promotion and may require additional study by students who have not satisfactorily completed aspects of the medical college curriculum. It also recommends candidates for the degree of doctor of medicine to the Faculty Council and accepts the responsibility of recommending to the Faculty Council the dismissal of any student whose academic performance is unacceptable in the judgment of the committee.

National Board of Medical Examiners (NBME) subtests are occasionally used by departments to evaluate course content. Scores from these examinations are kept confidential and are not available to any other institution or agency without written

permission from the student. Students may review their complete academic record at any time.

Rush utilizes a system of student anonymity for all written examinations. Performance in courses is known only to the student, his/her academic advisor, the course director for each course, and appropriate members of the Office of the Dean, provided that a minimum passing level of achievement has been demonstrated. Ratings by clinical instructors and, in most instances, oral and written examinations form the basis of evaluations of student performance in clerkships and therefore also the basis of recommendations for residencies. At the time of application for postgraduate training, a letter of evaluation is written by the Office of the Dean, with major contributions from the academic advisor. Prior to the composition of this letter, an individual conference is held with the student, and all pertinent factors for the letter of evaluation are assessed.

Academic Policies

(Additional policies are listed in the Academic Information section.)

Credit Hours

Rush University is on a quarter system. Each quarter is at least ten weeks in length.

Rush Medical College assigns no credit hour value to its courses. Medical students are enrolled full time even when carrying a reduced course load. Additionally, the clinical portion of the curriculum deviates from the quarter system by specifying the dates and number of weeks of full-time study spent in each area.

Credit by Examination

A student who passes a proficiency examination at Rush University will earn academic credit toward the degree. The credit will equal the credit value of the course as listed in the current *Rush University Bulletin*. Information that is posted on the transcript is the course prefix and number, title, and a K grade. A transcript guide that accompanies all transcripts issued by the Office of the Registrar explains that the K grade means credit was earned through proficiency examination.

Academic Difficulty

Students in Academic Difficulty. Course directors will at the earliest possible time notify the associate dean for medical student programs of the college of any students having academic difficulty. The Office of Med-

ical Student Programs will work with such students and with course directors to clarify the nature of the problem and to seek appropriate solutions. Students in academic difficulty should establish contact with the course director and appropriate member of the Office of the Dean to explore the factors relating to the student's academic difficulty.

Academic Probation. A student with significant academic deficiencies as determined by COSEP shall be considered on academic probation. Students placed on academic probation are thereby informed that there is serious concern about their academic performance and that they are subject to dismissal from the college should their unsatisfactory academic performance continue. Students shall be notified in writing why they have been placed on probation and what requirements must be met to be removed from probationary status. Students on probation may not register and receive credit toward the M.D. for courses (including clerkships) at other institutions without the consent of the Office of the Dean.

Automatic Probation. A student who has outstanding failures in courses scheduled for a total of 90 or more contact hours or a failure in a single required clerkship or who does not pass the National Board of Medical Examiners Part I Examination by November of the third year shall automatically be placed on academic probation.

Probation by COSEP. COSEP may place on academic probation any medical student who demonstrates deficiencies which COSEP, in the reasonable exercise of its discretion, determines to be significant.

Removal from Probation. A student shall remain on academic probation until he/she has made up all academic deficiencies and has met any other requirements established by COSEP for removal from probation.

Changes in Student Status

Scheduling First-year Studies Over Two Years. Prior to the start of the spring quarter of the first year, a student may petition COSEP for permission to complete the requirements of the first year over a two-year period. A proposed schedule of courses, developed in consultation with a member of the Office of Medical Student Programs, will be presented to COSEP as part of the student's petition. COSEP shall decide upon such petition and advise the student in writing of its decision.

Leave of Absence. The dean will decide upon requests for leaves of absence and will determine duration of the leave and the conditions, if any, for resuming status as a full- or part-time student. A student may not go on a leave of absence without first stating in writing to the dean his/her intent to return to the college to complete the requirements for the M.D. degree.

The dean will consult with COSEP insofar as possible before approving a leave of absence for a student with academic deficiencies.

Withdrawal from the University. Withdrawal is the voluntary termination of enrollment by a student. A student who withdraws and subsequently seeks reinstatement must submit a written petition for reinstatement to the Committee on Admissions of the college, if withdrawal took place before the completion of the student's first quarter of enrollment. If the student withdrew subsequent to the first quarter of enrollment, the student must submit a written petition for reinstatement to COSEP.

A student who fails to register and enroll in courses according to the policies of the college will be considered to have withdrawn. A student withdrawing under this provision may submit a written petition for reinstatement to the dean. The dean shall determine whether special circumstances existed which justified the student's failure to register or whether the student's petition should be forwarded to the appropriate faculty committee as set forth in the above paragraph.

Suspension. Suspension is the administrative termination of the enrollment of a student for a specific period of time.

Dismissal. Dismissal is permanent administrative termination of the enrollment of a student.

Grounds for Dismissal. The following shall constitute grounds for academic dismissal from the college:

- Outstanding failures, in any combination, in the first or second years in courses whose total of scheduled instructional hours equals or is greater than 35 percent of the total scheduled instructional hours for the entire first or second year. (An outstanding failure is a failure which remains after a student has not passed a course's single make-up examination.)
- A second failure in a given required core clerkship.
- A failure in a second required core clerkship even though one may have previously been made up.

- Unsatisfactory completion of a remedial program by a student on academic probation where satisfactory completion of such program was a requirement for continued enrollment.

- Failure after three attempts to pass the Part I Examination of the National Board of Medical Examiners.

- A determination by COSEP that a student is not fit to practice medicine. Fitness for the practice of medicine includes demonstrated ability to be a competent and effective physician and performance which reflects good moral character, a sense of responsibility, sound judgment, and the ability to master and properly apply subject matter.

Procedure for Dismissal

COSEP Action. COSEP shall review the performance of a student in accordance with these rules and, where appropriate, may recommend the dismissal of a student. The chairperson of COSEP shall notify the student who is subject to a COSEP recommendation for dismissal of COSEP's action and of the student's opportunity to meet with COSEP before it submits its recommendation to the Faculty Council. If the student fails to request a meeting with COSEP within 14 days from his/her receipt of the chairperson's notice, the student shall have waived any right to such meeting. The chairperson of COSEP shall determine the procedures for conducting the meeting with the student and shall, in his/her sole discretion, determine whether any participant in the meeting may be represented by an attorney.

After meeting with the student, if such meeting is requested in a proper and timely manner, COSEP shall submit its recommendation in writing to the Faculty Council.

Faculty Council Action. Within a reasonable time following its receipt of COSEP's recommendation, the Faculty Council shall consider the recommendation. The vice chairperson of the council shall chair meetings of the council when the council is considering recommendations for the dismissal of a student and shall invite the student and the student's faculty advisor to attend the Faculty Council meeting during its consideration of the COSEP recommendation affecting the student. The Faculty Council may in its sole discretion conduct a part of its deliberations concerning such recommendation outside the presence of the student and his/her advisor. The vice chairperson of the Faculty Council shall determine the procedures for conducting its meeting with the student and shall in his/her

sole discretion determine whether any participant in the meeting may be represented by an attorney. The Faculty Council shall submit its written recommendation together with COSEP's recommendation to the dean.

Dean's Action. The dean shall consider the recommendations of COSEP and the Faculty Council and shall make the final determination concerning the affected student's status in the college. The dean shall notify the student, COSEP, and the Faculty Council of his/her decision in the matter.

Examinations in a Course

The attainment of course goals by students should be evaluated by written examinations and/or other appropriate means. The course director will determine the number and format of examinations. Courses with more than 50 hours of scheduled instruction per quarter should include more than one examination or other evaluative exercise per quarter.

Examination Period. In the medical college, no classes are scheduled during the examination period; examinations in preclinical courses are scheduled by the assistant dean for preclinical curriculum.

Absences. Medical students missing examinations because of illness should contact their academic advisor in advance of the examination.

Incomplete Grades

The grade of incomplete (I) is normally given only when circumstances beyond the control of the student prevent completion of course requirements and the student has received permission to defer completion of these unmet course requirements. The course director shall determine what work will be required to remove the incomplete and shall establish a specific time within which the student must complete such work. Upon completion of the unmet course requirements this grade will be replaced by the new grade.

In-course Make-up Examinations

Excused Absences. Students with valid reasons may request permission to reschedule an examination. The decision to grant such permission will be made by the course director. A student denied permission may request the dean to review the denial. The dean's decision on the matter shall be final.

Unexcused Absences. A course director is not obligated to provide a make-up examination for an unexcused absence from an examination.

Make-up Examinations for Failed Courses in First and Second Years

A student receiving a failing grade at the completion of a course shall be given an opportunity to take a single make-up examination as a means of demonstrating his/her proficiency in the subject and rectifying his/her failure. However, a student may take make-up examinations in no more than two courses in any one quarter. If more than two courses are failed, the student, in consultation with his/her academic advisor, may choose which examinations to take. Make-up exams will be completed no later than the first week of the quarter following a course failure. Format and content of make-up exams will be determined by the course director. Make-up examinations will be scheduled by the dean's office in consultation with the appropriate course directors.

COSEP shall review the status of students who fail make-up examinations or who have outstanding course failures for which they did not qualify to take make-up examinations and shall consider options for remedial work.

Status of Students with Course Failures

At appropriate times during the academic year, as determined by the chairperson of COSEP in consultation with the associate dean for medical student programs, COSEP will review the progress of each student who has failed a course. After such review, COSEP shall establish requirements which a student must meet in order to resolve his/her deficiencies in academic performance or shall recommend dismissal.

No student shall be promoted from the second year to the third year until he/she satisfactorily completes all requirements of the first and second years. COSEP, in its discretion, may schedule second-year courses concurrently with make-up work for unsatisfactory first-year work, as it may consider appropriate for an individual student.

Remedial Programs for Students Failing Courses

First and Second Years. COSEP shall establish requirements for remedial work for students with one or more outstanding course failures in the first or second year. Remedial work requirements shall be reasonably related to the seriousness of the student's deficiencies. Such requirements may include, but need not be limited to:

- Summer tutorial study with reexamination.
- Participation in an approved summer course.

- Retaking failed courses during the next academic year.

- Retaking all courses including those satisfactorily passed.

In developing requirements, COSEP will consider the needs of the individual student and will endeavor to develop a program which, if successfully completed, will strengthen the student's prospects for successfully completing the remainder of his/her college program. Students who have no outstanding failures at the end of an academic year, but who have had to take make-up examinations in courses whose total of scheduled instructional hours equals or exceeds 30 percent of the complete program of instruction for that entire academic year may be placed on academic probation, in which situation COSEP will establish the requirements which students must meet before they are able to proceed to the studies of the next academic year.

Third and Fourth Years. A failure in a required core clerkship must be made up in a manner prescribed by the course director consistent with the reasons for the student's failure. Should a student be required to repeat all or part of the clinical rotation, effort should be made to have the student work with different supervisory and instructional staff. A student failing an elective clerkship must either repeat the elective or, with the approval of the dean's office, complete an alternative elective.

Failure to Pass Part I of National Board of Medical Examiners

All students must take Part I of the NBME no later than September following the school year of their enrollment in the second-year curriculum. Students who do not pass NBME Part I by November of their third year will be placed on probation and reviewed by COSEP. After consultation with the student and his/her academic advisor, COSEP may require the student to defer part or all of his/her clinical program to provide sufficient time for preparation. Students who fail the examination three times will be subject to dismissal.

Graduation Requirements

The following are prerequisites to the granting of the degree of doctor of medicine by Rush University:

- The level of achievement required by the faculty for the degree of doctor of medicine must be attained in a minimum of 35 months.

- Credit toward the M.D. degree may be granted to a student by the Office of the Dean for appropriate course work accomplished prior to matriculation at Rush Medical College.
- A minimum of 78 weeks of instruction at Rush Medical College is required for students entering at the third-year level from other medical schools. The Committee on Student Evaluation and Promotion may recommend additional quarters depending upon the progress made by the student following admission.
- Each student's progress in each year of the Rush Medical College curriculum will be evaluated by the Committee on Student Evaluation and Promotion, and additional study may be required in any year for students with academic difficulty.
- Students must pass all courses in the preclinical years before entering the clinical phase of the curriculum.
- Students are required to pass Part I and complete Part II of the examinations offered by the National Board of Medical Examiners prior to graduation.
- Students must pass all required clerkships and Part I of the examinations of the National Board of Medical Examiners before the date of commencement in order to participate in commencement ceremonies.

Academic Advisor Program

The Academic Advisor Program of Rush Medical College provides counseling and guidance for medical students in a manner that insures individual attention and continuity of contact between student and advisor. Each student is assigned an academic advisor and continues with the same academic advisor throughout his/her tenure at Rush Medical College.

Academic advisors are members of the faculty of Rush Medical College and each has responsibility for advising approximately 30

students. The assistant dean for academic counseling is responsible for program planning, coordination and evaluation.

Advisors are kept informed of current policies, procedures, and trends affecting student's participation in various programs of the medical school. They provide counseling in a number of areas, including course selection and scheduling, academic progress, and personal, educational and career development. Academic advisors assist each of their advisees in planning and implementing individual programs through each phase of undergraduate medical education.

Academic advisors are directly involved in the preparation of the dean's letters of evaluation, which represent a summation of the student's progress while in medical school and are utilized in the application process for postgraduate medical education programs.

Student Research Opportunities

Students are encouraged to have some research experience while they are in medical school. The opportunities range from laboratory experiences in the biomedical sciences to clinical investigation and field work in epidemiology, preventive medicine, and primary care. Such research can be carried out during summers or during time allotted for elective experiences. The dean's office provides a number of student fellowships to support such activities. A select group of students interested in pursuing careers in academic medicine is chosen each year to participate in a National Institutes of Health supported program for research training. The student's academic advisor and the Office of Medical Student Programs will assist in arranging for research experiences.

COLLEGE OF NURSING

Undergraduate Program

Philosophy

The College of Nursing embraces Rush University's commitment to freedom of inquiry, excellence in scholarship and service, and innovative leadership in the delivery of health care. This belief is reflected in standards developed through research endeavors, organizational design to help guide practitioners to conceptualize health care practice based on present and future needs of society, and the structure to integrate nursing practice, nursing education and nursing research.

Nursing and other health disciplines at Rush University are approached as applied sciences with all the scientific rigor implied by this concept. The ability to work harmoniously and productively with members of the various health professions and to contribute constructively toward change in the provision of health services to society, are integral components of each college's philosophy. The entire Rush enterprise shares a common belief that the University is designed to offer students the opportunity to achieve both breadth and depth in preparation for their careers in the health professions.

The Rush philosophy holds that nursing, as an applied science, builds on and expands concepts, theories, and models from related disciplines. Nursing is also an emerging scientific discipline with its science base evolving from the application and investigation of concepts and theories in the clinical practice of nursing. The developing science base and the expanding legal role of nurses require an increased level of individual and group accountability for the quality of services rendered.

Nursing at Rush is based on the belief that each individual is part of the human family with a potential for growth. Human development as a continuous process occurs within the context of interacting biological, social and environmental systems. The degree of health or illness is determined by the responses of individuals, groups, and communities to these influences during the life process.

The faculty of the College of Nursing supports the view that the learner is an individual with a highly specific sociocultural background, diverse life experiences, and varied interests and values. Faculty members provide students with a learning environment that

enhances individual potential by encouraging inquiry and self-directed independent learning.

At the undergraduate level, the liberal arts education serves to broaden perspectives in relation to man in society and a humanistic approach to nursing care, and to foster an esthetic value for self-fulfillment. The biological and behavioral sciences offer a foundation for understanding the nursing process and for applying theory to practice. The professional education component, based on scientific principles, provides knowledge, promotes skills and encourages the development of attitudes essential to the functioning of the professional nurse as a generalist. All of these elements in the philosophy of the College of Nursing create a climate of learning for students to grow and develop as competent and professional nurses.

Objectives

The objectives of the undergraduate program in nursing are to provide educational experiences that will enable the student to:

- Function as a general practitioner with a commitment to continuous learning and the improvement of nursing care.
- Synthesize principles and concepts from the biological and behavioral sciences.
- Achieve comprehensive nursing goals.
- Apply principles of problem-solving to assess, plan, implement, and evaluate preventive, therapeutic, and rehabilitative health care for individuals, families, and communities throughout the life cycle.
- Function collaboratively with the other members of the health team to provide continuity of care.
- Participate as a change agent within the health care delivery system, incorporating knowledge of social and political forces.
- Demonstrate commitment and accountability to health care consumers and to professional standards.
- Evaluate the applicability of research findings for clinical practice and explore areas for continued research.
- Engage in activities which promote professional development.

Admission

Students enter Rush at the junior level after completing the two-year prehealth curriculum at another accredited college or university. There are two options for admission. An individual either may attend one of 15 colleges and universities affiliated with Rush or another accredited institution.

- Students interested in attending an affiliated school are encouraged to submit applications to the affiliated colleges soon after the beginning of their senior year in high school. Each college has its own entrance requirements. The student's academic progress will be monitored by both Rush and the health careers advisor on the affiliated college campus. Students meeting the objectives of the prehealth curriculum, obtaining the approval of the health careers advisor and filing all required documents will move to Rush University to pursue the final two years of the program.

- Students may attend an accredited college or university of their choice to complete the prehealth curriculum. While students from affiliated schools have priority in admission, these students comprise only approximately 25 percent of the entering class. All other spaces have been filled by applicants from non-affiliated institutions.

Required prehealth courses must be taken for a letter grade rather than pass/fail. Additionally, no transfer credit is awarded for required course work in which the student earned less than a C grade. The Test of English as a Foreign Language (TOEFL) is required of all applicants whose native language is not English. Finally, all candidates for admission must provide evidence of good physical and mental health.

For further information, contact the Office of College Admissions Services at 942-7100.

RN Completion. Rush University is committed to continuing education and to the facilitation of study in baccalaureate and graduate programs. Individual curriculum plans are formulated for each RN. Interested registered nurses should contact the Office of College Admissions Services (942-7100) for information and referral to an advisor.

Prehealth Curriculum

Course	Quarter Hours	Semester Hours
• Chemistry, Inorganic	5-6	4
• Chemistry, Organic	5-6	4
• Human Anatomy and Physiology	10-12	8
• Microbiology	5-6	4
• Statistics, Introductory	4	3
• Growth and Development	4-5	3
• Behavioral Sciences	13-14	9
• Academic Electives	43-38	25
Total	90	60

- Required courses. If hour designations are different from those indicated, students should submit a course content description. (Human anatomy and physiology courses taken more than five years prior to the date of expected matriculation will not be applicable for meeting prehealth requirements. Chemistry and microbiology courses taken more than seven years prior to expected matriculation will not apply to meeting prehealth requirements.) Guidance in course selection is available through the admissions office at Rush.

Curriculum

At the College of Nursing, the program leading to the bachelor of science degree with a major in nursing requires successful completion of the prehealth curriculum and upper division study at Rush University.

Upon completion of the four-year program leading to the bachelor of science degree with a major in nursing, the graduate is eligible to take the licensure examination to become a registered professional nurse.

The goals of the program are to prepare the professional nurse with the knowledge base and intellectual flexibility to provide nursing care in a variety of current and emerging health care delivery systems and to interact with the individual, the family, the community, and other health professionals.

The development of nursing as an applied science begins with a foundation in the basic liberal arts and sciences to provide a

base for the upper division nursing curriculum at the Rush campus. The basic behavioral and biological sciences taken the first two or three years at other schools are translated during the last two years into nursing practice in the psychomotor skills laboratory, classrooms, seminars, and clinical experiences.

A team effort, involving basic scientists, nurse-scientists, practitioner/teachers, and the student, guides the application of current nursing knowledge and utilizes the freshest directions for change and the newest research findings. Throughout the curriculum the student is expected to become more and more self-directed and to concentrate on specific career goals through the selection of academic and clinical electives. Electives in the humanities are an integral part of the curriculum and complement the scientific and technical competencies required for professional practice.

The lifetime continuum of learning for nursing practice is acknowledged at Rush and enhanced by the availability of self-study resources and advanced studies in clinical nursing and nursing research.

Prehealth Curriculum

The prehealth portion of the undergraduate program requires two or three years of study, depending upon the college. These years are devoted to preparing the scientific foundation upon which the practice of nursing can be built. Courses in biological, physical and behavioral sciences are required with options in the humanities.

Specific course offerings and requirements may vary from campus to campus due to curricular offerings, scheduling, and course content. The prehealth curriculum printed in the Admission section suggests the kinds of courses which are normally required before a student comes to the Rush campus.

Upper Division Curriculum

The upper division curriculum consists each quarter of a set of correlated required courses that function much as one course. A required advanced course in either the biological or the behavioral sciences provides the core concepts for the set of courses.

Clinical nursing faculty presents related nursing concepts in the required seminar/practicum that accompanies the advanced course. In the practicum, students spend 9 to 24 hours weekly in clinical experiences planned to provide an opportunity for the practical application of nursing principles. Part

of this clinical time is spent learning basic nursing skills and techniques related to the seminar content in specially equipped psychomotor skills laboratories. Teaching of these skills is provided by both practitioner/teachers and laboratory personnel in order to assure competent, safe patient care. When competency is gained, the skills are applied in a clinical setting.

The scheme is followed for six quarters, with each nursing course assuming that students will achieve a progressively higher level of understanding and skill. Since courses may be offered only once each year, unsatisfactory performance will result in a year's delay in progress. Hence, progression is contingent upon successful completion of each quarter in sequence. Each nursing student will be assigned to clinical experience in the areas of medical, gerontological, psychiatric, community, obstetrical, surgical, and pediatric nursing. During the community experience, students make home visits in surrounding neighborhoods. Clinical assignments and conferences aid students in learning the special care requirements of patients in each nursing area. Arrangements have been made with other agencies and institutions in the Chicago area so that students will have outstanding clinical training in a variety of care settings. Students may spend clinical time at Rush-affiliated hospitals and other institutions throughout the city. Transportation expenses will be borne by the student.

Advanced Placement

Any student who has completed the prehealth curriculum and has been accepted by the college may take the Advanced Placement (AP) Examination for the following advanced sciences courses:

- Advanced Biological Sciences I
- Advanced Biological Sciences II
- Advanced Behavioral Sciences I
- Advanced Behavioral Sciences II
- Nursing Pharmacology I
- Nursing Pharmacology II
- Introduction to Nursing Research

Students successful in the Advanced Placement Examination earn academic credit toward the degree but will not necessarily reduce the time required for graduation. The credit will equal the credit value of the course as listed in the current *Rush University Bulletin*. Information that is posted on the transcript is the course prefix and number, title, credit value, and a K grade. A transcript guide

that accompanies all transcripts issued by the Office of the Registrar explains that the K grade means credit was earned through proficiency examination. Credit for the course will appear in the quarterly and cumulative totals as credit earned. The credit is not calculated into the student's grade point average (GPA).

In addition, registered nurses who have passed the advanced science course examination (AP) are eligible to take the AP examination in the respective nursing science course. For example:

- Examination in BIO 301—Advanced Biological Science I; then, if successful:
- Examination in NSG 312—Nursing Application II.

The same sequential testing format will be followed for each quarter of work challenged. A candidate successful in these two examinations will receive credit for 12 or 13 quarter hours. Credit for up to 45 quarter hours may be granted in this manner. In order to receive the bachelor of science degree a minimum of 45 quarter hours of credit must be earned in academic residence at Rush University.

A clinical advanced placement examination is offered each summer. Success on this examination exempts the RN student from the clinical practica associated with several courses.

For RNs who enroll in junior level clinical practica, psychomotor skills placement examinations are available.

Students interested in taking the Advanced Placement Examination should contact the director of the undergraduate program for a schedule of dates and fees.

Full-time and Part-time Enrollment

Undergraduate students must plan on full-time course work. (Registration for 12 quarter hours or more constitutes full-time enrollment.) The only exceptions are students who have received credit by examination for some of the required courses and registered nurses. Following are guidelines which will help in planning a part-time program.

- NSG 301 and NSG 311 are prerequisite to all other required nursing courses.
- BIO 301 is a prerequisite of BIO 302.
- NSG 312 is a prerequisite of NSG 313.
- BHV 402 is a prerequisite of BHV 403.
- NSG 411 is a prerequisite of NSG 412.
- All other core nursing courses must be completed prior to enrollment in NSG 401.
- NSG 413 is not available for advanced placement and requires 24 hours per week of clinical experience.

Curriculum: Baccalaureate Nursing

(All courses are required including eight quarter hours of electives)

Third Year		Quarter Hours
Fall Quarter		
NSG 301	Foundations of Nursing	4
NSG 311	Nursing Application I	8
	Elective	2-4
		14-16

Winter Quarter		
BIO 301	Advanced Biological Sciences I	4
NSG 312	Nursing Application II	8
PHR 303	Nursing Pharmacology I	2
		14

Spring Quarter		
BIO 302	Advanced Biological Sciences II	4
NSG 313	Nursing Application III	8
PHR 304	Nursing Pharmacology II	2
		14

Fourth Year		Quarter Hours
Fall Quarter		
BHV 402	Advanced Behavioral Science I	4
NSG 411	Nursing Application IV	9
NSG 382	Introduction to Nursing Research	2
		15

Winter Quarter		
BHV 403	Advanced Behavioral Science II	4
NSG 412	Nursing Application V	9
	Elective	2-3
		15-16

Spring Quarter		
NSG 401	Patient Care Management	4
NSG 413	Nursing Application VI	10
	Elective	2
		16
Subtotal		90
Prehealth Curriculum		90
Minimum Required for Graduation		180

Credit for courses earned in this manner will be noted on the academic record and will meet graduation requirements but will not necessarily reduce the time required for graduation.

Students successful in the Advanced Placement Examination earn academic credit.

Academic Policies

(Additional policies are listed in the Academic Information section.)

Academic Progression

The faculty reserves the right to request the withdrawal of any student whose conduct, physical or mental health, or performance demonstrates lack of fitness for continuance in a health profession. Any such student not voluntarily withdrawing will be dismissed from the University.

Since much of the work in nursing assumes that students will achieve a progressively higher level of understanding and skill, high academic performance is expected. The individual student is responsible for acquiring knowledge inside and outside of formal classroom and clinical settings.

Undergraduate students will be considered in good standing at Rush University unless placed on academic probation.

Academic probation is assigned to any student who receives a quarterly grade point average below 2.0 (A = 4.0) or whose cumulative grade point average falls below 2.0. In addition, a cumulative grade point average will be calculated for the following two sequences of courses every quarter.

- NSG 301, 401, 382; BIO 301, 302; BHV 402, 403; PHR 303, 304.
- NSG 311, 312, 313, 411, 412, 413.

Any student whose cumulative grade point average falls below 2.0 in either of these sequences will be placed on academic probation. Students placed on probation must regain the status of good standing within two academic quarters after the quarter in which probation is earned. Failure to do so will result in dismissal from the University.

Undergraduate nursing students may not remain in the program if they receive a grade of F in any of the following courses: BHV 402, 403; BIO 301, 302; NSG 301, 311, 312, 313, 382, 401, 411, 412, 413; PHR 303, 304.

Repeating Courses

A course in which a grade of D is earned may be repeated *only once*. The hour and grade points of the second grade only will be counted in the cumulative grade point average.

Credit Hours

Rush University is on a quarter system. Each quarter is at least ten weeks in length. An examination period is provided at the end of each term and most classes give a final examination during this time.

The quarter hour is the unit used by the College of Nursing, the College of Health Sciences, and The Graduate College to determine credit for courses taken. As a general rule one quarter hour represents one lecture hour, two hours of small group discussion, or three laboratory or clinical hours per week.

Transfer of Credit

Undergraduate courses taken at an accredited college or university that fulfill the prerequisites for admission may be applied toward the baccalaureate degree. Elective credit required at Rush may be fulfilled by upper division courses taken at another institution. Upper division courses must be at the 300 or 400 level, or its equivalent, and academic in nature. Courses in physical education or applied arts, for instance, would not be accepted. A transfer credit approval form should be completed.

Undergraduate Enrollment in Graduate Courses

With permission, undergraduate students may register for graduate level courses. Any credit earned in this manner will automatically apply toward the baccalaureate degree. Should an undergraduate student later apply for and gain admission to a graduate program at Rush University, the student may request that the graduate credit earned be applied toward the master's degree. A transfer credit approval form should be completed.

Credit will transfer in this manner only if the student has enough cumulative credits. A student must earn a minimum of 180 quarter hours to receive the bachelor of science degree. If a student actually earns 187 quarter hours, and 7 quarter hours are at the graduate level at Rush, 7 quarter hours could potentially be credited toward the master's degree.

Incomplete Grades

The grade of incomplete (I) is normally given only when circumstances beyond the control of the student prevent completion of course requirements and the student has re-

ceived permission to defer completion of these unmet course requirements. The course director shall determine what work will be required to remove the incomplete and shall establish a specific time within which the student must complete such work.

An incomplete grade does not reflect upon the quality of the student's performance, and upon completion of the unmet course requirements this grade will be replaced by the new grade.

Students must contract with the instructor in order to receive an I grade. Students receiving a grade of I are responsible for finding out from the instructor the exact work required to remove the incomplete. Course work shall be completed by the end of the next quarter the student is enrolled, or sooner, at the discretion of the instructor and course director. An I grade not removed by end of the quarter will revert to a failing (F or N) grade unless otherwise negotiated by the instructor and student.

Absences

Students are responsible for all material presented in class sessions. Faculty will not be available to students who miss or are late for classes. Students are expected to be in attendance at all seminar and clinical practice periods and are responsible for all content presented therein. When illness or other special circumstances prevent attendance, the student is responsible for contacting the instructor (in advance, if possible) to plan for meeting the objectives on an individual basis. Students absent from an examination are responsible for notifying the course director according to the guidelines specified in the course syllabus. Failure to do so will result in a zero for that examination or an incomplete for the course as determined by the course director.

Examination Policy

The examination policy is the responsibility of the individual course director who will inform students of examination requirements for that particular course. A period at the end of the quarter is provided for examinations. This period may be used as the course director chooses. The Office of the Registrar publishes the final examination schedule each quarter.

Dean's List

Undergraduate students earning a 3.5 or higher grade point average for at least 12 credits of classroom course work are given recognition by having their names placed on

the Dean's List. The Dean's List is published at the beginning of each new quarter for work completed in the previous quarter.

Leave of Absence

A student who must interrupt his/her studies for reasons of sustained ill health or compelling personal situations may apply for a leave of absence for a stated period of time, usually not to exceed one year. Leave of absence requests must be submitted in writing to the admissions and progression committee. Nursing students must be in good academic standing to be considered for approval. If approved by the committee and the director of the undergraduate program, the student must satisfy the conditions of the leave before reentering and must comply with all policies, requirements, and course sequences in effect at the time of reentry. The student shall notify in writing the administrator(s) who granted the leave of his/her intent to return at least three months in advance of reenrollment.

Withdrawal from the University

Students planning to withdraw from the University voluntarily must complete a form available in the Office of the Registrar. The student will obtain several signatures and return all Medical Center materials, the identification card, and name pin. Withdrawal is final once all Medical Center bills have been paid and the completed form is submitted to the Office of the Registrar.

Readmission

Any student who has withdrawn from a program or has not been enrolled two consecutive quarters or any dismissed student may apply for readmission by submitting an application for this purpose, with a fee of \$30, to the Office of College Admissions Services. Applications for reenrollment must be received at least three months before the planned return. An applicant for readmission must have an interview with a member of the admissions and progression committee. Reentering students must meet the conditions for reenrollment stated in their dismissal or reentry acceptance letter and all policies, requirements, and course sequence in effect at the time of reentry. The student will pay tuition and fees at the rates in effect at the time of reenrollment.

Nursing students who received a failure grade in courses which resulted in dismissal must repeat the course upon their reinstatement. The hour and grade points of the second

grade only will be counted in the cumulative grade point average, although both grades will appear on the transcript.

Graduation Requirements

The bachelor of science degree with a major in nursing requires a minimum of 180 quarter hours. At least 90 quarter hours are used to fulfill the prehealth curriculum. The remaining 90 quarter hours constitute the upper division curriculum of which at least 8 quarter hours must be upper division electives.

A minimum of 45 quarter hours shall be spent as an upper division student in academic residence at Rush University. Credit earned through proficiency examination may not be used to meet this requirement.

Candidates for the bachelor of science degree must earn a 2.0 cumulative grade point average in NSG 311, 312, 313, 411, 412, and 413. Candidates must also earn at least a 2.0 cumulative grade point average in NSG 301, 401, 382; BIO 301, 302; BHV 402, 403; and PHR 303, 304. Finally, a 2.0 cumulative grade point average must be earned in all computed upper division credits taken at Rush University.

During the fourth year, all students are expected to participate in comprehensive examinations which assist faculty in counseling students for licensure examination and are used for program evaluation. However, no minimum score is required.

Participation at commencement is expected of all graduates.

After receiving the baccalaureate degree, graduates are eligible to write the National Council Licensure Examination for Registered Nurses.

Graduate Programs

Philosophy

Graduate nursing education at Rush University is based on the belief that nursing is an applied science that focuses on the human life cycle and interacting systems in the environment. The master's program prepares the nurse for practice as a nurse clinical specialist or practitioner and provides the basis for continued graduate study. The doctoral program prepares the nurse for leadership in the advancement of the science of nursing.

A significant concept underlying the graduate curriculum is the view that human development is a dynamic, continuous process that occurs within a health-illness continuum.

The nurse clinical specialist must be cognizant of the dynamic interrelationships among biological, psychological, and sociological environmental systems which influence perceptions of and responses to physiological and psychosocial health problems. Advances in clinical practice must be based on knowledge and understanding of the biological and behavioral sciences. Therefore, the curriculum includes courses in physical assessment, health systems, behavioral sciences, biological sciences, and clinical investigation. The seminar and practicum courses, as well as independent study, focus on the student's area of clinical specialization and provide theoretical and clinical bases for practice as a nurse clinical specialist.

Graduate education provides for the development of intellectual inquisitiveness, analytic thinking, critical judgment and a high degree of professional responsibility and accountability. Doctoral study affords the student the opportunity to combine cognate studies, field studies, and research to expand and advance the body of knowledge in nursing, to make informed judgments, and to take appropriate action for developing health care policies and changing health care systems.

Educational Programs

The first phase of graduate study is clinical specialization at the *master's level* with intensive study and examination of the biological and behavioral sciences as they are applied within the context of nursing practice, administration and education. The clinical specialist has a broad understanding of the dynamic interrelationships among psychological, physiological, sociological and environmental systems which influence perceptions of and responses to health problems and advances in clinical nursing practice. Successful completion of the requirements for the master's degree prepares the graduate to function in combined roles, such as a practitioner/teacher role, which is comprised of the clinical core as the central focus with beginning competence in the complemental areas of teaching, management, research, and consultation.

In the second phase of graduate study (the *doctoral level*) the student examines further the substantive areas of a clinical specialty and the current generalized theories in nursing, integrates knowledge from the behavioral and biological sciences, and develops research competence. The nurse who successfully completes the requirements for the doctor of

nursing science degree (D.N.Sc.) can expand the general theoretical body of nursing knowledge and its applications to diverse and changing nursing problems. A graduate of the D.N.Sc. program will have developed competency as an expert clinical practitioner, the investigative skills of a nurse researcher, and leadership skills for developing health policy and changing health care systems.

Objectives

The *master's program* curriculum is designed to prepare graduates to function as clinical specialists or nurse practitioners. These roles require the central focus on clinical practice with a beginning level of knowledge and skill in education, research, administration, and consultation. Upon completion of the program, the student will be able to:

- Practice as a nursing clinical specialist or nurse practitioner in the specialty area of study.
- Analyze nursing theories in relation to clinical practice and to the larger scientific community.
- Use a theoretical framework to analyze and synthesize clinical data.
- Synthesize knowledge from the biological and behavioral sciences and apply the knowledge to clinical practice.
- Integrate a complementary role of teacher, manager, or researcher with the clinical practice.
- Analyze, evaluate, and apply research findings in the selected field of clinical practice.
- Utilize basic concepts and principles of learning and teaching with clients, peers, and/or students.
- Utilize basic concepts of leadership and management including knowledge of internal and external organizational influences on nursing practice.
- Analyze the nursing component of health care systems in the context of interacting social, economic, and political systems.
- Provide clinical consultation, utilizing knowledge and skills from clinical practice, education, and leadership.

In addition to meeting the objectives of the master's level of graduate study, the graduate of the *doctoral program* will be able to:

- Plan, implement and evaluate changes in health care systems commensurate with current knowledge and future health needs of society.
- Design, conduct and direct nursing research.

- Formulate nursing theories from a range of clinical investigations and contribute to the body of nursing science.

- Provide leadership essential to the advancement of nursing practice and nursing science.

Admission Requirements

Master of Science

Each applicant to the graduate nursing program should have attained a baccalaureate degree in nursing from a National League for Nursing (NLN) accredited program. Graduates from other than NLN accredited programs or who have earned a baccalaureate degree in a field other than nursing who fulfill all other requirements stated here may petition the Office of College Admissions Services to take placement examinations. These examinations assist the faculty in evaluating nursing preparation.

All work toward the baccalaureate degree must be at the university level. The applicant also must have completed an upper division major. Each applicant should have a B average (A=4.0) or above for the final two years of college work and be licensed to practice as a professional nurse in at least one state. Acceptable scores on the Graduate Record Examination (GRE), aptitude test, and one statistics course (upper division preferred) are also required.

In addition, all applicants are required to interview with the coordinator of the clinical program. The Test of English as a Foreign Language examination may be required if English is not the applicant's native tongue.

All materials of the application are taken into consideration when evaluating an applicant. Applicants are not necessarily excluded from or accepted into a program because of deficiencies or proficiencies in any one area.

Doctor of Nursing Science

Both postbaccalaureate and post-master's applications are considered for the doctoral program in nursing. Postbaccalaureate applicants accepted for doctoral study begin graduate study at the master's level, with the focus on clinical specialization. The student and advisor plan the integrated program of study from post-baccalaureate level through completion of the D.N.Sc. degree. However, acceptance for admission to the master of science program does not guarantee admission to the doctoral program. The student's continuation in doctoral level clinical courses is usually contingent upon the

recommendation of the advisor and program coordinator. The doctoral applicant must meet the following admission requirements, in addition to the requirements for the master of science program.

Favorable recommendations are required from at least three individuals who know the applicant well. These recommendations should be sought from nurses, teachers, or researchers, at least one of whom holds an earned doctorate. The recommendations should attest to the professional nursing competence and personal characteristics of the applicant and predict the applicant's success as a doctoral student and future professional contributions.

Students should have a combined score of 1650 on the verbal, quantitative, and analytical sections of the Graduate Record Examination.

Personal interviews are required with at least one faculty member who teaches courses at the doctoral level, with the coordinator of the applicant's selected clinical field and, when possible, with the director of graduate programs. The purpose of the interviews is to ascertain the graduate student's general knowledge of nursing, comprehension of the selected field of nursing, and ability to express ideas and opinions. The applicant's previous clinical experience will be critically evaluated.

The applicant is expected to have a 3.5 cumulative grade point average on a 4.0 scale for the master's level of study.

The Graduate Admissions, Progressions, and Graduations Committee of the College of Nursing shall select for doctoral study those qualified applicants whose professional goals and educational objectives can best be met by the resources of Rush University. The director of graduate programs will notify the applicant of his/her admission to the status of doctoral student. At the same time the director of graduate programs will appoint the doctoral student's advisor.

Curriculum: Master's Program

Content Category	Anes.	Comm.	Geron.†	M/S	Oncol.	P/C	Psych.	Rehab.
Biological Sciences	10	4-10	7-10	7-10	7-9	7-10	5	5
Behavioral Sciences	4	4	4	4	4	4	4	4
Research	4	6	4	4	4	4	4	4
Organizational Science	2	2	2	2	2	2	2	2
Clinical Seminars and Practica	20	27	18	18	18	18	21	23
Physical Assessment	4	4	4	4	4	4	4	4
Nursing Theory	2	2	2	2	2	2	2	2
Specialty Area Theory	14*	11*	6 (GNP)	—	2	—	3	—

*Residency required but no credit awarded.

†Either clinical specialist or Geriatric Nurse Practitioner (GNP) major.

Curriculum

Master of Science

Programs leading to the master of science degree with a major in nursing provide the opportunity for clinical specialization in anesthesia nursing, community health nursing, gerontological nursing, psychiatric/mental health nursing, oncological nursing, medical/surgical nursing, parent/child health nursing and rehabilitation nursing.

The master of science degree with a major in nursing requires completion of a minimum of one calendar year or 55 quarter hours of credit, exclusive of prerequisites. Each student is assigned an advisor who helps plan the program of study. Programs preparing the nurse practitioner require an additional period of study.

Required course work encompasses concepts of health care delivery, behavioral sciences, biological sciences and clinical investigation. Seminar-practicum courses provide individual and group focus on the student's area of clinical specialization. In most of the practica, the student may choose both the practice area and the setting if faculty preceptors in the student's area of specialization and in the preferred setting are available. A thesis and/or additional course work in complementary areas, such as teaching, research, or administration, are optional.

Course Requirements Summary

Course requirements vary from program to program. The following table shows the minimum credit hours of course work in each content category: anesthesia, community health, gerontology, medical/surgical, oncology, parent/child health, psychiatry/mental health, and rehabilitation. The college reserves the right to modify course requirements in consideration of overall curriculum goals and design.

Doctor of Nursing Science

The student examines the substantive areas of a clinical specialty and current generalized theories of nursing, integrates knowledge from the behavioral and biological sciences, and develops research competence. The nurse who completes the D.N.Sc. program will be able to expand the body of nursing knowledge and its applications to diverse and changing nursing problems.

Doctoral study in nursing at Rush University emphasizes nursing as an applied science which considers the life cycle of man and the interacting systems in man's environment. The doctoral student and his/her major advisor mutually define an individual program which includes an area of clinical nursing for specialization and investigation. The program will enable the graduate to have the competencies of an expert clinician, the investigative skills of a nurse researcher, and the leadership skills for developing health care systems.

The doctoral student and his/her advisor define a program of study at the time of admission to doctoral student status. The program of study is written and signed by the student and advisor. In no instance may the course work be less than the equivalent of 125 quarter hours credit. For the postbaccalaureate student the entire doctoral program must be

completed within a ten-year period. For those students having an interrupted program of study (admitted or readmitted to Rush University following the master's program), the requirements for the doctoral degree must be met within a five-year period.

Each doctoral student designates an area of clinical nursing for specialization and investigation. The doctoral student choosing the midwifery specialization as a postbaccalaureate student will not be awarded a master's degree during his/her course of study. The following is required for the postbaccalaureate program leading to the doctor of nursing science degree:

Academic Policies

(Additional policies are listed in the Academic Information section)

Academic Progression

The faculty reserves the right to request the withdrawal of any student whose conduct, physical or mental health, or performance demonstrates lack of fitness for continuance in a health profession. Any such student not voluntarily withdrawing will be dismissed from the University.

Students in all graduate programs must maintain a cumulative 3.0 average in order to remain in good academic standing. A full-time student whose cumulative grade point average falls below a 3.0 may enroll for one quarter as a probationary student to attempt to raise his/her cumulative grade point average. A part-time student is placed on academic probationary status for a period of time specified by the graduate committee on admissions and progressions. Further enrollment in a graduate program will be denied if the grade point average is not raised in the quarter(s) of probationary status.

A student must achieve an A or B grade in all required clinical nursing courses. If less than a B grade is achieved, a student may repeat the one course only with the approval of the graduate committee on admissions and progressions, the student's advisor and the graduate program coordinator. An F grade in a required clinical nursing course will result in dismissal from the program.

For all other courses, a master's degree student must achieve an A, B, C or pass grade. No more than two grades of C are allowed in courses other than the required clinical nursing courses. The receipt of a third

Curriculum: Doctoral Program

NURSING

NSG 501, NSG 503
HSM 571 (or equivalent)
NSG 601
NSG 696
Clinical Nursing

52-59 Total Quarter Hours

BASIC SCIENCES

Biological Sciences
Behavioral Sciences

14 Total Quarter Hours

RESEARCH

Research Design and Methods
Statistics
Electives

27 Total Quarter Hours

Minor and/or Electives

25-32 Total Quarter Hours

C will result in dismissal from the program. If readmitted to the program, a student must repeat the course in which the third C grade was earned. Doctoral students who do not receive a B or pass grade in any course at Rush University or an approved course at another institution will have their progression reviewed by the graduate committee on admissions and progressions.

Certain required behavioral and biological science courses are prerequisite to or concurrent with clinical nursing courses. These courses are specific to the clinical area of study.

Nursing courses numbered 501, 511, 512, 513, 514, and 515 must be taken in sequence when these courses are part of a student's major program.

Changing Programs

Changing the major within the graduate programs requires written consent of both program coordinators and the director of graduate programs. Permission will be considered based upon available clinical preceptors. All transfers become effective at the beginning of the next academic quarter.

Full-time and Part-time Enrollment

Full-time Study. Full-time master's students will carry a course load of 12 to 16 quarter hours each quarter. Outstanding students may register for additional courses only after approval of both advisor and the director of graduate programs. Written approval is required prior to registration.

Doctoral students are encouraged to enroll in full-time study. Nine quarter hours per quarter is considered full-time study. For the postbaccalaureate student the entire doctoral program must be completed within a ten-year period. For those students having an interrupted program of study (admitted or readmitted following the master's program) the requirements for the doctoral degree must be met within a five-year or 60-month period. Special cases must be referred to the director of graduate programs.

Part-time Study. Graduate students may enroll for courses on a part-time basis. However, all prerequisites for a specific course must be met before admission to the course. Part-time master's students must complete degree requirements within five years (60 months). Special cases must be referred to the director of graduate programs.

Graduation Requirements

The master of science degree with a major in nursing requires a minimum of 55 quarter hours with the exception of the clinical specialties of community health nursing, which requires 65 (minimum) quarter hours plus a two-quarter residency, the anesthesia nurse practitioner program which requires 62 quarter hours and a 52-week residency, and the gerontological nurse practitioner program which requires 58 quarter hours.

The doctoral student and his/her academic advisor define a program of study at the time of admission to doctoral student status. The program of study is written and signed by the student and the advisor and filed with the director of graduate programs by the end of the first quarter of doctoral study. In no instance may the course work be less than the equivalent of 125 quarter hours credit.

A maximum of 20 percent of graduate level course work may be taken pass/no pass.

Credit Hours

Rush University is on a quarter system. Each quarter is at least ten weeks in length. An examination period is provided at the end of each term and most classes give a final examination during this time.

The quarter hour is the unit used by the College of Nursing, the College of Health Sciences, and The Graduate College to determine credit for courses taken. As a general rule one quarter hour represents one lecture hour, two hours of small group discussion (one hour for D.N.Sc. students), or three laboratory or clinical hours per week.

Transfer of Credit

Graduate credit earned elsewhere may be applied to the master of science and doctor of nursing science degree requirements for Rush, subject to the approval of the advisor. Credit in excess of nine quarter hours requires approval of the director of graduate programs. Graduate level courses taken at a recognized college or university may be applied to the doctor of nursing science degree requirements at Rush, subject to the approval of the academic advisor. Credits in excess of 55 quarter hours require approval of the director of graduate programs. Before this credit may be approved to meet degree requirements, a transfer credit approval form must be completed. The form should be completed during the first quarter of the enrollment in the degree program.

After matriculation, students who plan to take courses off campus must complete either a transfer credit approval form or register for concurrent enrollment. Information regarding either of these options is available in the Office of the Registrar.

Credit by Examination

A student who passes a proficiency examination at Rush University will earn academic credit toward the degree. The credit will equal the credit value of the course as listed in the current *Rush University Bulletin*. Information that is posted on the transcript is the course prefix and number, title, credit value, and a K grade. A transcript guide that accompanies all transcripts issued by the Office of the Registrar explains that the K grade means credit was earned through proficiency examination. Credit for the course will appear in the quarterly and cumulative totals as credit earned. The credit is not calculated into the student's GPA.

Residence Requirements

Doctoral Students. The doctoral student must be enrolled at Rush University as a full-time student for three consecutive quarters during graduate study.

Absences

Students are responsible for all material presented in class sessions. Faculty will not be available to students who miss or are late for classes. Students are expected to be in attendance at all seminar and clinical practice periods and are responsible for all content presented therein. When illness or other special circumstances prevent attendance, the student is responsible for contacting the instructor (in advance, if possible) to plan for meeting the objectives on an individual basis. Students absent from an examination are responsible for notifying the course director according to the guidelines specified in the course syllabus. Failure to do so will result in a zero for that examination or an incomplete for the course as determined by the course director.

Examination Policy

The examination policy is the responsibility of the individual course director who will inform students of examination requirements for that particular course. A period at the end of the quarter is provided for examinations. This period may be used as the course director chooses. The Office of the Registrar publishes the final examination schedule each quarter.

Incomplete Grades

The grade of incomplete (I) is normally given only when circumstances beyond the control of the student prevent completion of course requirements and the student has received permission to defer completion of these unmet course requirements. The course director shall determine what work will be required to remove the incomplete and shall establish a specific time within which the student must complete such work.

An incomplete grade does not reflect upon the quality of the student's performance, and upon completion of the unmet course requirements this grade will be replaced by the new grade.

Graduate students may request an incomplete from a course director. If the course director grants the privilege of an incomplete, the I grade must be removed as contracted by the course director and the student. The I grade must be removed by the end of the next quarter or it will revert to a failing (F or N) grade unless otherwise negotiated by the course director and student.

A student receiving an I grade may proceed for one quarter; however, further continuation is contingent upon the final grade received for the course.

Any exception to these policies for the College of Nursing requires permission from the student's academic advisor and the director of graduate programs. A memo to the registrar signed by both of the above individuals must be presented at the time of registration when the exception is to be granted.

Leave of Absence

Master's Students. A student who must interrupt his/her studies for reasons of sustained ill health or compelling personal situations may apply for a leave of absence for a stated period of time, usually not to exceed one year. Leave of absence requests must be submitted in writing to the graduate committee on admissions and progressions. Nursing students must be in good academic standing to be considered for approval. If approved by the committee and the director of graduate programs, the student must satisfy the condition of the leave before reentering and must comply with all policies, requirements, and course sequences in effect at the time of reentry. The student shall notify in writing the administrator(s) who granted the leave of his/her intent to return at least three months in advance of reenrollment.

Doctoral Students. A doctoral student who must interrupt study should consult with his/her academic advisor and prepare a revised proposal for completion of the program. Leave of absence requests must be in writing, accompanied by a signed revised program of study, and submitted to the director of graduate programs and the Graduate Admissions Progressions, and Graduations Committee for recommendation.

Withdrawal from the University

Students planning to withdraw from the University voluntarily must complete a form available in the Office of the Registrar. The student will obtain several signatures and return all Medical Center materials, the identification card, and name pin. Withdrawal is final once all Medical Center bills have been paid and the completed form is submitted to the Office of the Registrar.

Readmission

Any student who has withdrawn from a program or has not been enrolled for two consecutive quarters or any dismissed student may apply for readmission by submitting an application for this purpose with a fee of \$30 to the office of admissions. Applications for reenrollment must be received at least three months before the planned return. An interview may be required. Reentering students must meet the conditions for reenrollment stated in their dismissal or reentry acceptance letter and all policies, requirements, and course sequence in effect at the time of reentry. The student will pay tuition and fees at the rates in effect at the time of reenrollment.

Nursing students who received a failing grade in courses which resulted in dismissal must repeat the course upon their reinstatement. The hour and grade points of the second grade only will be counted in the cumulative grade point average.

COLLEGE OF HEALTH SCIENCES

Academic Policies

(Additional policies are listed in the Academic Information section and in the program descriptions)

Credit Hours

Rush University is on a quarter system. Each quarter is at least ten weeks in length. An examination period is provided at the end of each term and most classes give a final examination during this time.

The quarter hour is the unit used by the College of Nursing, the College of Health Sciences, and The Graduate College to determine credit for courses taken. As a general rule one quarter hour represents one lecture hour, two hours of small group discussion or three laboratory or clinical hours per week.

Transfer of Credit

Undergraduate Students. Undergraduate courses taken at an accredited college or university that fulfill the prerequisites for admission may be applied toward the baccalaureate degree.

Graduate Students. Graduate credit earned elsewhere may be applied to the master of science degree requirements for Rush, subject to the approval of the program director. Before this credit may be approved to meet degree requirements, a transfer credit approval form must be completed. The form should be completed during the first quarter of enrollment in the degree program.

After matriculation, students who plan to take courses off campus must complete either a transfer credit approval form or register for concurrent enrollment. Information regarding either of these options is available in the Office of the Registrar.

Credit by Examination

A student who passes a proficiency examination at Rush University will earn academic credit toward the degree. The credit will equal the credit value of the course as listed in the current *Rush University Bulletin*. Information that is posted on the transcript is the course prefix and number, title, credit value, and a K grade. A transcript guide that accompanies all transcripts issued by the Office of the Registrar explains that the K grade means credit was earned through proficiency examination. Credit for the course will appear in the quarterly

and cumulative totals as credit earned. The credit is not calculated into the student's grade point average (GPA).

Full-time and Part-time Enrollment

Twelve quarter hours is considered full-time enrollment. Registration for fewer than 12 hours constitutes part-time enrollment.

Undergraduate Enrollment in Graduate Courses

With permission, undergraduate students may register for graduate level courses. Any credit earned in this manner will automatically apply toward the baccalaureate degree. Should an undergraduate student later apply for and gain admission to a graduate program at Rush University, the student may request that the graduate credit earned be applied toward the master's degree. A transfer credit approval form should be completed.

Credit will transfer in this manner only if the student has enough cumulative credits. A student must earn a minimum of 180 quarter hours to receive the bachelor of science degree. If a student actually earns 187 quarter hours, and 7 quarter hours are at the graduate level at Rush, 7 quarter hours could potentially be credited toward the master's degree.

Incomplete Grades

The grade of incomplete (I) is normally given only when circumstances beyond the control of the student prevent completion of course requirements and the student has received permission to defer completion of these unmet course requirements. The course director shall determine what work will be required to remove the incomplete and shall establish a specific time within which the student must complete such work.

An incomplete grade does not reflect upon the quality of the student's performance, and upon completion of the unmet course requirements this grade will be replaced by the new grade.

Medical Technology. Students receiving grades of I are responsible for finding out from the instructor the exact work required to remove the incomplete. In the case of a required course, work ordinarily shall be completed and a letter grade received by the end of the fifth week of the next quarter the student is enrolled or sooner at the discretion of the instructor

and course director. A grade of incomplete in an elective course will automatically revert to a failing grade unless a change of grade is received by the registrar within one calendar year.

Graduate Students. Graduate students may request an incomplete from the course director. An I grade not removed by the end of the next quarter will revert to a final grade as determined by the course director.

Absences

Students are responsible for all material presented in class sessions. Faculty will not be available to students who miss or are late for classes. When illness or other special circumstances prevent attendance, the student is responsible for contacting the instructor (in advance, if possible) to plan for meeting the objectives on an individual basis. Students absent from an examination are responsible for notifying the course director according to the guidelines specified in the course syllabus. Failure to do so will result in a zero for that examination or an incomplete for the course as determined by the course director.

Examination Policy

The examination policy is the responsibility of the individual course director who will inform students of examination requirements for that particular course. A period at the end of the quarter is provided for examinations. This period may be used as the course director chooses. The Office of the Registrar publishes the final examination schedule each quarter.

Dean's List

Undergraduate students earning a 3.5 or higher grade point average for at least 12 credits of classroom course work are given recognition by having their names placed on the Dean's List. The Dean's List is published at the beginning of each new quarter for work completed in the previous quarter.

Leave of Absence

A student who must interrupt his/her studies for reasons of sustained ill health or compelling personal situations may apply for a leave of absence for a stated period of time, usually not to exceed one year. Leave of absence requests must be submitted in writing to the department chairperson or his/her designate. If approved by the department chairperson and dean, the student must satisfy the conditions of the leave before reentering and must comply with all policies, requirements, and course sequences in effect at the time of reentry. The student shall notify in writing the administrator(s) who granted the leave of his/her intent to return. The student will pay tuition and fees at the rate in effect at the time of reenrollment.

Withdrawal from the University

Students planning to withdraw from the University voluntarily must complete a form available in the Office of the Registrar. The student will obtain several signatures and return all Medical Center materials, the identification card, and name pin. Withdrawal is final once all Medical Center bills have been paid and the completed form is submitted to the Office of the Registrar.

Readmission

Any student who has withdrawn from a program or has not been enrolled for two consecutive quarters or any dismissed student may apply for readmission by submitting an application for this purpose with a fee of \$30 to the office of admissions. Applications for reenrollment must be received at least three months before the planned return. An interview may be required. Reentering students must meet the conditions for reenrollment stated in their dismissal or reentry acceptance letter and all policies, requirements, and course sequence in effect at the time of reentry. The student will pay tuition and fees at the rates in effect at the time of reenrollment.

Department of Related Health Programs

The Department of Related Health Programs consists of the following academic units: Section of Clinical Nutrition, Section of Medical Physics, Section of Medical Technology, Section of Occupational Therapy, and Section of Speech and Hearing Sciences.

Through these units, the department offers six degree programs: the bachelor of science with a major in medical technology, and the master of science with majors in clinical nutrition, occupational therapy, speech/language pathology, audiology and medical physics.

The faculties of these programs are actively involved in research activities and provide direct patient care and hospital support services.

Section of Medical Technology

Philosophy

The contribution of medical technology to the patient and to the health care delivery system is primarily one of diagnostic services. As clinical medicine expands in the variety and number of diagnostic tests performed and as new methodologies and instruments become increasingly sophisticated, there is a crucial need for more high quality professionals—not merely more technologists. Today's professional technologists must develop not only technical expertise but teaching and administrative competence as well. They must be able to adapt to rapid changes in the field while maintaining an optimal level of performance. As members of the health care team, medical technologists must have a basic understanding of the role of other health care practitioners in order to function effectively and bring the best possible care to the individual and the community. Although the work in medical technology often does not place the practitioner in actual physical proximity to the patient, the technologist, nevertheless, must maintain a high degree of compassion and empathy and a constant awareness that the welfare of the patient is the ultimate goal.

It is the aim of the baccalaureate program in medical technology to educate technologists to meet the changing needs of laboratory medicine more effectively and with greater efficiency.

Admission Requirements

Students wishing to apply to the medical technology program may do so in one of two ways.

- Affiliated college applicants are students who have enrolled in any of the colleges affiliated with Rush. Of the 15 affiliated colleges of Rush University, the following offer preparation for medical technology:

Beloit College, Beloit, Wisconsin
Colorado College, Colorado Springs, Colorado
Cornell College, Mt. Vernon, Iowa
Fisk University, Nashville, Tennessee
Grinnell College, Grinnell, Iowa
Illinois Institute of Technology, Chicago, Illinois
Knox College, Galesburg, Illinois
Lake Forest College, Lake Forest, Illinois
Lawrence University, Appleton, Wisconsin

Macalester College, St. Paul, Minnesota
Monmouth College, Monmouth, Illinois
Ripon College, Ripon, Wisconsin.

Students apply to the affiliated college of their choice and complete the two-year preprofessional program before being admitted to Rush for the two-year professional program. Students are recommended for admission to the Rush program by their health careers advisor at the affiliated college.

- Other applicants are students who have completed (or are completing) the preprofessional requirements at an accredited college or university other than the affiliated institutions listed above. These applicants should apply to the medical technology program by January for admission in the fall.

Curriculum

Preprofessional Program

The prehealth portion of the medical technology program is taken at an affiliated college or other accredited college or university and requires two or three years of study, depending upon the college. These years are devoted to preparing the scientific foundation upon which the practice of medical technology can be built. The first year emphasizes courses in biological, physical, and behavioral sciences, with options in the humanities. The succeeding prehealth years are used to increase depth in the sciences as they relate more specifically to health fields and to enhance personal experience by a broad choice of electives in the humanities.

Specific course offerings and requirements may vary from campus to campus due to curriculum offerings, scheduling, and course content. The following listing suggests the kinds of courses that normally are required before a student comes to the Rush campus.

Preprofessional Program

Courses	Quarter Hours	Semester Hours
Chemistry (including Organic and Quantitative Analysis)	24	16
Biology (including Microbiology)	18	12
Statistics	4	3
Academic Electives	44	29
TOTAL	90	60

Curriculum: Professional Program*

Junior Year			Senior Year		
Fall Quarter			Fall Quarter		
BCH	411 Clinical Chemistry I	4	IMM	402 Clinical Immunology	2
MTK	304 Basic Laboratory Skills	7	MTK	421 Practicum in Clinical Chemistry	8
HEM	301 Hematology I	5	MTK	423 Practicum in Immunology	4
			HSM	301 Health Care Management	3
16			17		
Winter Quarter			Winter Quarter		
MIC	311 Diagnostic Bacteriology	5	MTK	422 Practicum in Hematology	8
BCH	412 Clinical Chemistry II	4	MTK	425 Practicum in Immunohematology	4
MTK	303 Body Fluid Analysis	5	HEM	425 Hematology II	2
IMM	301 Basic Immunology	3			
17			14		
Spring Quarter			Spring Quarter		
MIC	411 Parasitology, Mycology & Virology	5	BCH	413 Clinical Chemistry III	3
IMM	403 Clinical Serology	3	MTK	441 Seminar in Medical Technology	2
IMM	431 Immunohematology	5	HEM	426 Hematology III	2
			MTK	424 Practicum in Microbiology	8
13			15		

*Courses may not always be offered in sequence listed.
All courses are required courses.

Professional Program

In the junior and senior years the student integrates the theory of clinical medicine with the practice of clinical laboratory procedures, learning basic theory and skills in hematology, clinical chemistry, immunology, and clinical microbiology in the junior year, going on to more advanced courses in those areas in the senior year. Senior students apply basic concepts as they rotate through the laboratories of Presbyterian-St. Luke's Hospital and other affiliated hospitals. In addition, students are prepared to fill supervisory and teaching positions through courses in management.

The specific courses taken, the credit hours assigned and their most probable sequencing is outlined above.

Academic Progression

The faculty reserves the right to request the withdrawal of any student whose conduct, health, or performance demonstrates lack of fitness for continuance in a health profession. Any such student not voluntarily withdrawing will be dismissed from the University.

High academic performance in required courses is expected. Undergraduate students will be considered in good standing at Rush University unless placed on academic probation.

Academic probation is assigned to any student who earns a quarterly grade point average below 2.0 or whose cumulative grade point average falls below 2.0. Students placed on probation have two quarters in which to regain the status of good standing. Failure to do so will result in dismissal from the University. Medical technology students may receive no more than one D in the following courses each year to remain in the program:

BCH, 411, 412, 413
IMM 301, 402, 403, 431
MIC 311, 411
HEM 301, 425, 426
MTK 303, 304

An F grade in any of these courses will result in dismissal.

Each student in the medical technology program must pass a departmental comprehensive examination given following the third year of study. This examination covers all material presented in the third-year curriculum. Students failing this examination will not be allowed to continue to the fourth year of the program when the practicum courses are offered. A failing mark on the departmental comprehensive examination given at the end

of the third year of the program results in dismissal from the program regardless of previous grades earned.

In the fourth year of the program, work in practicum courses must be at the C level or better. Any work in practicum courses below the level required for a C grade will result in an F grade. An F grade in such courses may be repeated only once with the new grade replacing the F in the cumulative grade point average. A second grade of F in a practicum course will result in dismissal. Any student who needs to repeat a practicum course must do so within one year.

Undergraduate students may repeat a practicum course in which they received a grade of F. The new grade replaces the F in the cumulative grade point average. Such a repetition may occur only once.

Academic Policies

(Additional policies are listed in the College of Health Sciences and in the Academic Information sections.)

Full-time Enrollment

The medical technology professional program requires full-time enrollment from September to June.

Certification

The comprehensive technical curriculum at Rush University prepares the student to enter the practice of medical technology. Each graduate is eligible to take the National Certifying Examination given by the American Society of Clinical Pathologists, and upon passing the examination he/she becomes certified as a medical technologist, MT(ASCP). Graduates are eligible to take any of the other national certifying examinations if they so desire.

Graduation Requirements

The bachelor of science degree with a major in medical technology requires a minimum of 180 quarter hours. This includes at least 90 quarter hours earned as a lower division student at an affiliated school or before entrance as a transfer student. A minimum of 45 quarter hours of academic credit shall be earned as an upper division student in academic residence at Rush University.

Candidates for the bachelor of science degree must earn a 2.0 cumulative grade point

average in all computed upper division credits taken at Rush University.

Participation in cap and gown at commencement exercises is expected of all graduates.

Educational Activities

The faculty of the section is responsible for providing both the didactic course work and the clinical experiences necessary for students to complete successfully all degree requirements for the bachelor of science with a major in medical technology. The program is accredited by the American Medical Association's Committee on Allied Health Education and Accreditation (CAHEA).

Research Activities

Faculty members of the Section of Medical Technology engage in research either technical or educational in nature. Areas include biochemistry, educational administration, education, hematology, hospital administration, immunohematology, immunology and microbiology.

The Section of Medical Technology supports and is involved in the administration of the Research and Teaching Laboratory of the Department of Related Health Programs. The primary function of the laboratory is to provide research facilities and equipment in support of faculty and student research projects.

Service Activities

Faculty members are actively involved in the clinical laboratories of Rush-Presbyterian-St. Luke's Medical Center, maintaining active research, supervisory, and clinical positions in their specialty areas. Several faculty members hold conjoint appointments in Rush Medical College and provide the laboratory medicine courses for the medical college curriculum.

The Section of Medical Technology offers a continuing education program for the laboratory staff of Rush-Presbyterian-St. Luke's Medical Center, maintaining a record of the continuing education activities of all participants. Program faculty and resources span the gamut of clinical laboratory medicine and, therefore, actively support and participate in all areas where technical laboratory application is involved.

Section of Clinical Nutrition

Philosophy

The faculty of the Section of Clinical Nutrition subscribes to the belief that to achieve a leadership role in the profession, the practitioner must be able to demonstrate clinical competence at an advanced level and managerial skills required to facilitate cost-effective and quality nutrition care. Also, the practitioner must be able to evaluate current research in light of relevance and application to effective and efficient practice, and must become involved in the research process. The curriculum is designed to support this belief and provides learning opportunities at the graduate level in clinical nutrition, management practice and research methodology.

The Program

A two-track program having a common core of courses and leading to a master of science degree with a major in clinical nutrition is offered. *Track I* is a 15-month dietetic internship/master's degree program that integrates didactic and practicum experience. On completion of the program the student is eligible to take the registration examination for dietitians. *Track II* is designed for the registered dietitian who wishes to expand his/her understanding of advanced human nutrition, clinical management techniques, and the research process.

Admission Requirements

The student must meet the following requirements:

- Hold a baccalaureate degree from an accredited college or university.
- Provide evidence of having successfully completed a college course in basic statistics.
- Have achieved a minimum cumulative grade point average in college work of 3.0 (A=4.0).
- Have achieved a combined verbal and quantitative score of not less than 1000 on the Graduate Record Examination, taken within the last three years.

Track I students must provide evidence of having completed the minimum academic requirements necessary for membership in the American Dietetic Association (designated as Plan IV). In addition, evidence of work experience in food service systems and/or clinical dietetics is highly recommended.

Track II students must provide evidence of registration as dietitians in the American Dietetic Association.

Academic Progression

The faculty reserves the right to request the withdrawal of any student whose conduct, health, or performance demonstrates lack of fitness for continuance in a health profession.

Only grades of A, B or C may fulfill degree requirements in all required courses as listed in the curriculum outline. Automatic probation shall result when a student falls below a cumulative grade point average of 3.0 or when a student receives a grade of F in any course. A student placed on academic probation shall be informed in writing by the Committee on Progress and Promotions. The letter shall state the reason(s) why the student has been placed on probation and what conditions must be satisfied to be removed from probationary status.

A student who earns a grade of D or F in a required course must repeat the course. Failure to earn a grade of C or better in a repeated course shall result in dismissal from the program. Only one required course may be repeated and the new grade will replace the earlier D or F grade in the cumulative grade point average.

Full-time students placed on probation must earn a cumulative grade point average of 3.0 or greater by the end of the next two consecutive quarters. Part-time students placed on probation must earn a cumulative grade point average of 3.0 or greater by the end of the next three quarters. Improvement in grade point average must be demonstrated each quarter.

Academic Policies

(Additional policies are listed in the College of Health Sciences and in the Academic Information sections.)

Full-time and Part-time Enrollment

Track I (combined dietetic internship/master's degree program) is offered on a full-time basis only. The program extends over five quarters including a summer session.

Track II (master's degree program for registered dietitians) is offered on a part-time basis only. The program may be completed in six quarters or longer, up to five years.

Curriculum: Clinical Nutrition

Track I		Credit Hrs.	Track II		Credit Hrs.
Fall			Fall		
NTR 521	Human Metabolism I	4	NTR 521	Human Metabolism I	4
HCE 525	Communication in the Health Professions	3	HCE 525	Communication in the Health Professions	3
NTR 503	Dietetics I	3			
NTR 511	Practicum I	3			
		13			
Winter			Winter		
NTR 522	Human Metabolism II	4	NTR 522	Human Metabolism II	4
HSM 574	Health Care Delivery Systems	3	HSM 574	Health Care Delivery Systems	3
NTR 504	Dietetics II	3			
NTR 512	Practicum II	3			
		13			
Spring			Spring		
NTR 541	Interrelationships of Nutrition & Disease I	4	NTR 541	Interrelationships of Nutrition & Disease I	4
HCE 581	Introduction to Research	4	HCE 581	Introduction to Research	4
NTR 505	Dietetics III	3			
NTR 513	Practicum III	3			
		14			
Summer			Summer		
NTR 542	Interrelationships of Nutrition & Disease II	4	NTR 542	Interrelationships of Nutrition & Disease II	4
NTR 571	Management in Clinical Dietetics	3	NTR 571	Management in Clinical Dietetics	3
NTR 506	Dietetics IV	3			
NTR 514	Practicum IV	3			
		13			
Fall			Fall		
NTR 510	Current Professional Issues	3	NTR 510	Current Professional Issues	3
NTR 585	Applied Research Problem	4	NTR 551	Nutrition in Human Development I	4
NTR 515	Practicum V Elective	3			
		12			
			Winter		
			NTR 552	Nutrition in Human Development II	4
			NTR 585	Applied Research Problem	4-5
Total Hours Required For Graduation		65	Total Hours Required For Graduation (includes 9-10 hours of electives)		54

Graduation Requirements

Cumulative grade point average of 3.0 or greater.

Minimum number of quarter hours required for graduation:

Track I=65

Track II=54

Track I students shall complete degree requirements within 24 months from the beginning of the first quarter of enrollment in the program.

Track II students shall complete degree requirements within five years from the beginning of the first quarter of enrollment in the program.

Research Activities

The faculty of the Section of Clinical Nutrition is involved in both basic and clinical research. This activity frequently is in collaboration with Rush Medical College faculty members in such departments as biochemistry, immunology/microbiology and internal medicine. Often, research activity grows out of nutrition consultations by a faculty member in the section.

Clinical nutrition faculty members have been instrumental in establishing the Research and Teaching Laboratory of the Department of Related Health Programs. The laboratory director is a member of the clinical nutrition faculty. The principal function of the laboratory is to provide research facilities and equipment to support faculty and student research projects.

Service Activities

Most faculty members contribute to patient care. This service may represent a major responsibility or may be limited to consultation and/or related research. Some faculty members participate in hospital food service administration while others are a part of the health care team working directly with patients. All members are committed to the dissemination of sound nutrition information in the hospital and in the community.

Section of Medical Physics

Career Opportunities

Medical Physics is concerned with the application of the concepts, methods, and forces of physics to the diagnosis and treatment of human disease. Medical physicists work at the forefront of medical science, often in hospitals with associated academic programs. They carry out research, give direct assistance to their medical colleagues, and help train future medical physicists, resident physicians, medical students, and medical technicians.

The Program

The master of science with a major in medical physics program is offered through the Section of Medical Physics, Department of Related Health Programs of the College of Health Sciences. The diversity of interests of the faculty allows the section to offer a comprehensive program responsive to the needs of students in several areas of medical physics: dosimetry, imaging applied to medicine, radiation sources, physics of radiation therapy, physics of diagnostic radiology, physics of nuclear medicine and radiation protection.

In order to produce well-rounded, highly competent medical physicists, the curriculum provides training in the physics aspects of radiation therapy, diagnostic radiology, nuclear medicine, radiation protection, and radiobiology, as well as in such subjects as anatomy, physiology, and computer science. The recommended curriculum sequence follows.

Curriculum: Medical Physics

YEAR I			
Fall	MPH 460	Intro. Radiation Safety/Diag. Rad. Phy.	3
	MPH 481	Intro. Ther. Rad. Physics	3
	MPH 501	Radiation Physics	3
	PHY 451	Physiology I	5
			14
Winter	MPH 461	Physics of Diagnostic Radiology	3
	MPH 482	Therapeutic Rad. Physics	3
	MPH 502	Radiological Physics I	3
	ANA 599	Independent Study: Anatomical Science	3
			12
Spring	MPH 459	Rad. Safety for Research Workers	2
	MPH 483	Dosimetry Applied to Therapeutic Rad.	4
	MPH 503	Radiological Physics II	3
	RAD 521	Radiation Oncology	2
			11
Summer	MPH 505	Rad. Physics Laboratory	3
		Elective	3
			6
YEAR II			
Fall	MPH 599	Independent Study	3
	MPH 597	Intro. to Research	3
	MPH 505	Rad. Physics Laboratory	3
	MPH 531	Radiation Biology	3
			12
Winter	MPH 471	Physics of Nuclear Medicine	3
	MPH 559	Radiation Protection	3
	MPH 561	Physics of Diagnostic Rad.	3
	MPH 598	Thesis Research	3
			12
Spring	MPH 491	Intro. to Computers	3
	MPH 504	Topics in Radiation Dosimetry	3
	MPH 598	Thesis Research	3
		Elective	3
			12
TOTAL Year I and Year II = 79			

Admission Requirements

The successful applicant must meet the following requirements:

- Earn a bachelor of science degree with a major in physics or bachelor of science degree in a related discipline with postbaccalaureate education or training in the sciences or in the health professions. The B.S. degree must be from an accredited college or university in the United States or the equivalent of such a degree.
- Earn an overall GPA of 2.5 or greater in college work.
- Earn a science GPA of 3.0 or greater in college work.
- Provide evidence of having taken the Graduate Record Examination within the last three years.
- Successfully complete one year of college chemistry with laboratory. This requirement may be satisfied by concurrent enrollment in the master of science with a major in medical physics program.
- Submit letters of recommendation from previous college or university instructors.
- Provide evidence of prior success in pursuing independent study.
- Submit a written description of the applicant's scientific research interests.

Applicants holding a baccalaureate degree but with no graduate training should apply for the fall quarter to insure appropriate course sequencing. Such applications will be accepted until February 15 with notification to the applicant of admissions committee action no later than April 15. Later applications may be accepted on a space available basis.

Students with graduate school or scientific research experience, or students who have attended medical school may apply for admission to begin study any quarter of the year. Such applications should be made at least two months prior to the start of classes for the quarter in question.

Academic Policies

(Additional policies are listed in the College of Health Sciences and in the Academic Information sections.)

Academic Progression

The faculty reserves the right to request the withdrawal of any student whose conduct, health, or performance demonstrates lack of fitness for continuance in a health profession. Any such student not voluntarily withdrawing will be dismissed from the University.

Only grades of A, B and C may fulfill degree requirements in all required courses as listed in the curriculum outline. Students will be considered in good standing at Rush University unless placed on academic probation.

Academic probation is assigned to a student who earns a quarterly grade point average between 2.0 or 2.99 inclusive or whose cumulative grade point average falls below 3.0. Full-time students placed on probation must earn a cumulative grade point average of 3.0 or greater at the end of the next consecutive quarter. Part-time students placed on probation must earn a cumulative grade point average of 3.0 or greater by the end of the next two consecutive quarters.

A student who earns a quarterly grade point average below 2.0 will be dismissed from the University. A student who earns a grade of D or F in a required course must repeat the course. Only one required course may be repeated and the new grade will replace the earlier D or F grade in the cumulative grade point average. Failure to earn a grade of C or better in a repeated course will result in dismissal from the University.

Students placed on academic probation will be so notified by the program director following a meeting of the faculty at which academic progress has been discussed. The letter will state the reasons for placing the student on academic probation and the specific requirements which must be met by the student to reestablish good standing.

Full-time and Part-time Enrollment

Although the faculty recommends full-time enrollment to maximize the opportunities available to students, part-time enrollment for all or part of the program may be arranged.

Graduation Requirements

The master of science with a major in medical physics program requires a cumulative grade

point average of 3.0 or greater to graduate. All degree requirements must be completed within five calendar years from the beginning of the first quarter in which the student is enrolled in the program. The minimum number of quarter hours required for graduation is 79. Each student must develop and carry out a research project which culminates in the writing of a thesis or the completion of several practicum reports.

At the end of the first year, the student must take and pass a qualifying examination based on selected basic principles of physics and course work taken to date. The examination will include both written and oral components. Passing this examination qualifies the student to continue work toward the master's degree. A final examination in defense of the thesis and/or practicum reports will be given at the end of the second year. Failure to pass the final examination will require determination by the faculty whether the student will be granted a second and last opportunity. Upon such recommendation, a second examination may be scheduled at a mutually determined time within nine months of the initial examination.

Professional Certification

This program provides the basis for certification as a radiological physicist by the American Board of Radiology.

Educational Activities

In addition to providing educational and research experiences for students in the master's program, the medical physics faculty, who hold joint faculty appointments in the Department of Therapeutic Radiology of Rush Medical College, participate in the education of medical students, residents, and other health professions trainees.

Service Activities

All faculty members are practitioner/teachers who provide patient care services through the facilities of Presbyterian-St. Luke's Hospital. Several faculty members also serve as medical physics consultants to a network of hospitals and health care centers in metropolitan Chicago.

Research Activities

Faculty members are active in theoretical and experimental research in medical physics and its clinical applications. This research includes the study of basic mechanisms by which radiation transfers energy to biological

and chemical materials; the development of new techniques for directing and measuring various radiations used in the detection, diagnosis, and treatment of cancer; the application of radioactive tracers to diagnosis and to the study of metabolic processes; and the optimization of physical parameters for specific studies in diagnostic medical imaging including radiology, computerized radiography and tomography, radionuclide imaging, dosimetry in radiation protection, and radiobiology.

Section of Occupational Therapy

Philosophy

Educational Orientation. The master's degree program in occupational therapy emphasizes the educational approach which interfaces occupational therapy and didactic material with clinical instruction and practice. The purpose of this educational philosophy is to allow the student maximum opportunity for the highest levels of integration of content and understanding of the rationale for instruction. This philosophy is fostered through such concurrent sequencing of theory and clinically based experience that the student is able to relate to either or both environments depending upon which best facilitates the learning process. The early and continuous collaboration between the theoretical and the clinical learning environments allows for the development of a collegueship between faculty and students. Through such a relationship the student's personal growth and opportunities for independent thinking are facilitated. Since the program is concerned with the student as an individual, the relationship with faculty provides the student with a variety of individualized learning options and experiences within diversified work environments.

Professional Orientation. The foundation upon which this specialized degree program is based rests on those principles and concepts of the neurosciences which are encompassed in the practice of sensory integrative therapy. Although occupational therapy relies on several different theoretical constructs, at this advanced level of professional education, the neuroscientific approach is more suitable to facilitating the acquisition of a sound base in sensory integration. The sensory integration focus of the program, while neurological in perspective, is also rooted in the fundamental premise of

occupational therapy—the client viewed as a whole functioning person can best be treated through the use of therapeutic activity. The basic assumption of this program is that activity is an integral part of an individual's life and that successful involvement in activity relies on man's sensory integrative mechanisms and their neurological foundations.

The graduate program allows the student to practice and integrate neurological/sensory integration principles and the fundamental premise of occupational therapy within the framework of the basic roles of the therapist—practitioner, researcher, and educator. The graduate of this program is, above all else, a practitioner who is able to incorporate the techniques of sensory integrative treatment into the ongoing practice of occupational therapy. Since research and education are important to the process of graduate education and are also major professional needs, the roles of researcher and educator are vital components of the practitioner role.

Specialized Orientation. The program covers a specific range of topics leading to specialized competence in the area of sensory integration. The program focuses on the person throughout the entire life span with emphasis on developmental dysfunction at the various stages. The academic progression of the program produces a graduate who is proficient in sensory integrative therapy based on an in-depth understanding of the theory and application of the neurological functioning of the person and the ability to assess deficits and treat the manifested dysfunctions. The graduate is unique in that he/she is qualified to look not only at infancy and childhood dysfunctions, but also at the sensory integrative deficits of adolescent, adult, and geriatric populations.

Curriculum: Occupational Therapy

Fall Quarter		Quarter Hrs.	Winter Quarter		Quarter Hrs.
NEU 501	Introduction to Neuroscience	3	NEU 521	Neurophysiology I: Sensory System	3
OCC 501	Sensory Integration Assessment	4	OCC 502	Sensory Integration: Theory and Application I	4
HCE 581	Introduction to Research	4	OCC 541	Related Assessment and Evaluation	3
OCC 531	Principles and Methods of Education	2	OCC 521	Occupational Therapy Theory I	3
OCC 511	Occupational Therapy Practicum I*	2	OCC 512	Occupational Therapy Practicum I*	3
		15			16
Spring Quarter		Quarter Hrs.	Summer Quarter		Quarter Hrs.
NEU 522	Neurophysiology II: Neurology of Motor Behavior	3	NEU 503	Neuropsychology	3
OCC 503	Sensory Integration: Theory and Application II	4	OCC 504	Sensory Integration: Theory and Application III	4
OCC 522	Occupational Therapy Theory II	2		Practicum* or Elective or Independent Study	6
	Practicum* or Elective or Independent Study	3			13
		12			

Research Implementation is a required course worth six credits. The student may divide those credits among winter, spring, and summer quarters, according to established guidelines.

	Student with more than two years experience	Student with less than two years experience
Total Required Courses:	53 hours	59 hours
Electives or Independent Study:	9 hours	3 hours
Minimum Required for Graduation:	62 hours	62 hours

*Practicum: Students with less than two years of work experience as practicing therapists are required to complete four quarters of practicum. Two quarters of practicum are required for those students who have two or more years of professional work experience.

The Program

Admission Requirements

Applicants to the program should have completed a baccalaureate degree in occupational therapy from an accredited institution and be registered by the American Occupational Therapy Association. A minimum of two years experience as a practicing occupational therapist is recommended prior to admission. Undergraduate transcripts should reflect a 3.0 grade point average (A=4.0). All applicants are to complete the Graduate Record Examination. In addition, one course in basic statistics, with

a final grade of B or better, is a prerequisite for admission to the program.

It is also recommended that each applicant have experience with a pediatric population either through work experiences or some other related experience. If the applicant does not have this experience at the time of application, assistance will be given in gaining experience.

Academic Progression

The faculty reserves the right to request the withdrawal of any student whose conduct, health, or performance demonstrates lack of fitness for continuance in a health profession. Any such student not voluntarily withdrawing will be dismissed from the University.

Only grades of A, B or C may fulfill degree requirements in all required courses as listed in the curriculum outline. Students will be considered in good standing at Rush University unless placed on academic probation.

Academic probation is assigned to a student who earns a quarterly grade point average between 2.0 and 2.99 inclusive, or whose cumulative grade point average falls below 3.0. Full-time students placed on probation must earn a cumulative grade point average of 3.0 or greater at the end of the next consecutive quarter. Part-time students placed on probation must earn a cumulative grade point average of 3.0 or greater by the end of the next two consecutive quarters.

A student who earns a quarterly grade point average below 2.0 will be dismissed from the University. A student who earns a grade of D or F in a required course must repeat the course. Only one required course may be repeated and the new grade will replace the earlier D or F grade in the cumulative grade point average. Failure to earn a grade of C or better in a repeated course will result in dismissal from the University.

Students placed on academic probation will be so notified by the program director following a meeting of the faculty at which academic progress has been discussed. The letter will state the reasons for placing the student on academic probation and the specific requirements to be met by the student to reestablish good standing.

Academic Policies

(Additional policies are listed in the College of Health Sciences and in the Academic Information sections.)

Enrollment Options

Students seeking the master of science degree may enroll as full-time or part-time students. Full-time students can complete the program in 12 months, 4 academic quarters. Part-time students may take up to three years to complete all courses.

Students may also enroll as unclassified students (See Academic Information section) taking individual courses on a continuing educa-

tion basis. Credits granted to unclassified students may be applied to the degree if the student formally enrolls in the program at a later time. Twelve quarter hours of such credit is the maximum allowed for application to the degree.

Full-time and Part-time Enrollment

Full-time Study. The full-time academic program is a 12-month program covering four academic quarters. A minimum of 62 credits is required for graduation. Instruction is provided by occupational therapy faculty and faculty members from other departments and colleges within the University.

Part-time Study. The academic program may be extended to 24 months and all degree requirements must be completed within 36 months from the beginning of the first quarter in which the student is enrolled in the program. To be considered part time, a student must be enrolled for a minimum of 3 credits and fewer than 12 credits per quarter.

Scheduling

Courses are scheduled to accommodate the working therapist. Classes are held during the evenings, on weekends, or as concentrated minicourses to allow students to maintain employment.

Practicum

In conjunction with formal course work, students will enhance clinical and investigative expertise by participating in practicum experiences in clinical sites within the Medical Center and its institutions.

The practicum experiences are designed as supervised field experiences in the exploration of principles and techniques specific to and related to sensory integration. Practicum activities focus on varied developmental and diagnostic populations. Practicum competencies may be met in clinical sites within the Rush network or may be incorporated into the student's daily job-related responsibilities.

Graduation Requirements

The master of science with a major in occupational therapy degree requires a cumulative grade point average of 3.0 or greater to graduate. All degree requirements must be completed within 36 months from the beginning of the first quarter in which the student is enrolled in the program. The minimum number of quarter hours required for graduation is 62.

Work-Study Options

A limited number of part-time occupational therapy positions are available for those students in need of employment while enrolled in the program. These positions are at the staff therapist level, and working hours may be arranged with the unit supervisor depending upon academic and individual schedules.

Educational Activities

The Section of Occupational Therapy provides professional training for experienced registered occupational therapists in sensory integration, a specialized approach within occupational therapy. The program prepares the therapist to return to the professional community to practice the skills of occupational therapy and base that practice on a fuller understanding of the foundations and principles of sensory integration, and to engage in research and educational activities to enhance further the theory and practice of sensory integration.

The section offers a four-quarter program leading to the master of science degree with a major in occupational therapy. The program is one of the few in the United States which offers intensive study in the area of sensory integration and neurosciences. Faculty members within the Section of Occupational Therapy are involved in teaching and supervisory responsibilities for the master of science degree program in the College of Health Sciences. In addition, faculty members are involved in integrating the theoretical and clinical aspects of occupational therapy through the implementation of sensory integration programs with diagnostic and development groups in the various occupational therapy units of the Medical Center.

Research Activities

Members of the section are increasingly involved in determining the possibilities for research in sensory integration. Several faculty members currently are involved in conducting studies on the assessment of sensory integrative deficits and the application of sensory integrative techniques to various populations. Another multifaceted collaborative study between therapists from several clinical units focuses on vestibular functioning of normal adult populations, as determined by postrotatory nystagmus data, preliminary to hypotheses concerning dysfunctional groups. In addition to the research related directly to sensory integration, other faculty members are involved in projects related to specific aspects

of their client population such as swallowing dysfunction, hand rehabilitation and psychosocial functioning.

Service Activities

Members of the section provide a full range of assessment and therapeutic services for a variety of diagnostic and developmental populations. Occupational therapy services cover acute and chronic psychiatry, both in- and out-patient; pediatrics, including neonatology, developmental disorders, behavioral and emotional disorders, and learning disabilities; adult physical rehabilitation; geriatrics; and alcohol intervention programs. There are several sub-units within each of these areas, and within each unit, therapists utilize sensory integrative treatment when it is considered appropriate.

Section of Speech and Hearing Sciences

Philosophy

The basic tenet of the faculty in the Section of Speech and Hearing Sciences is that the professional education of speech pathologists and audiologists, who desire practice in hospitals or other health care facilities, is optimized by drawing upon patients, staff and the physical resources of an academic medical center. In contrast to many professional training programs, the clinical skills of Rush students are fostered, grow, and mature via observation and supervision by teacher/practitioners. All faculty are certified by the American Speech Language/Hearing Association (ASHA) and participate fully in the clinical process, serving patients presenting a full range of communicative disorders. In addition to close clinical supervision which provides the necessary foundation for clinical education, the faculty has developed a curriculum intended to meet ASHA standards. This is supplemented by the expertise of physicians, scientists, and other health care personnel within the Medical Center. Additionally, the faculty's commitment to research and the belief that an appreciation of scientific matters is valuable to the clinical process and professional growth provide the basis for master's thesis research in the program.

Admission Requirements

Applicants to the graduate program should have completed a baccalaureate degree from an accredited institution in either communicative disorders, speech pathology, audiology, psychology, linguistics, speech communication, or special education. Transcripts should reflect a strong record in the following course work: introduction to psychology, child psychology, statistics, phonetics, language acquisition or

linguistics, acoustics or the science of sound, anatomy and physiology of the speech and hearing mechanism. Applicants should have participated in the management of cases presenting a range of communicative disorders for 50 to 100 contact hours. Students considering public school placements should complete course work and practica to this end at their undergraduate institutions.

Curriculum: Speech-Language Pathology

Year I			Year II		
Fall			Fall		
SHS 540	Anatomy and Physiology of the Vocal Mechanism	4	SHS 501	Speech and Hearing Science	4
SHS 521	Language Acquisition	3	HCE 581	Intro. to Research	4
SHS 505	Audiology I	3	SHS 524	Fluency, Dysfluency and Stuttering	3
SHS 511	Speech-Language Pathology Practicum I	3	SHS 515	Speech-Language Pathology Practicum V	3
			Elective		3
13			17		
Winter			Winter		
NEU 501	Intro. to Neuroscience	3	SHS 575	Issues in Counseling	3
SHS 561	Articulation Disorders	4	SHS 593	Seminar in Speech-Language Pathology	3
SHS 522	Language Disorders	3	SHS 590	External Practicum in Speech-Language Pathology	10
SHS 512	Speech-Language Pathology Practicum II	3			
13			16		
Spring			Spring		
SHS 565	Motor Speech Disorders	3	SHS 562	Communicative Disorders Associated with Cranio-facial Anomalies	3
SHS 551	Diagnostic Methods in Speech-Language Pathology	4	SHS 566	Pediatric Neuro. Disorders	3
SHS 533	Aural Rehabilitation	4	SHS 590	External Practicum in Speech-Language Pathology	10
SHS 513	Speech-Language Pathology Practicum III	3			
14			16		
Summer					
SHS 527	Total Communication	3			
SHS 563	Voice Disorders	4			
SHS 564	Aphasia & Other Symbolic Disorders	3			
SHS 514	Speech-Language Pathology Practicum IV	3			
13					
Total Year I and Year II			102		

Curriculum: Audiology

Year I		Year II	
Fall		Fall	
SHS 541	Anatomy, Physiology, Pathology of the Auditory System 3	SHS 501	Speech and Hearing Science 4
SHS 521	Language Acquisition 3	HCE 581	Intro. to Research 4
SHS 505	Audiology I 3	SHS 592	Seminar in Audiology 3
SHS 516	Audiology Practicum I 3	SHS 520	Audio Practicum V 3
			Elective 2
	12		16
Winter		Winter	
NEU 501	Intro. to Neuroscience 3	SHS 553	Instrumentation in Hearing & Speech Sciences 4
SHS 531	Amplification for the Hearing Impaired 3	SHS 585	External Practicum in Audiology 10
SHS 506	Audiology II 3		Elective 2
SHS 517	Audio Practicum II 3		
SHS 522	Language Disorders or Elective 3		
	15		16
Spring		Spring	
SHS 543	Electrophys. Assessment of the Auditory System 4	SHS 572	Psychoacoustics 4
SHS 542	Electronystagmography 4	SHS 575	Issues in Counseling 3
SHS 518	Audio Practicum III 3	SHS 595	External Practicum in Audiology 10
SHS 533	Aural Rehabilitation 4		
	15		17
Summer			
SHS 544	Child Audiology 3		
SHS 527	Total Communication 3		
SHS 526	Industrial Audiology 3		
SHS 519	Audio Practicum IV 3		
	12		
Total Year I and Year II		103	

Academic Policies

(Additional policies are listed in the College of Health Sciences and in the Academic Information sections.)

Academic Progression

The faculty reserves the right to request the withdrawal of any student whose conduct, health or performance demonstrates lack of fitness for continuance in a health profession. Any such student not voluntarily withdrawing will be dismissed from the University.

Only grades of A, B, or C may fulfill degree requirements in all required courses as listed in the curriculum outline. Students will be considered in good standing at Rush University unless placed on academic probation.

Academic probation is assigned to a student who earns a quarterly grade point average

between 2.0 and 2.99, inclusive (A=4.0), or whose cumulative grade point average falls below 3.0. Full-time students placed on probation must earn a cumulative grade point average of 3.0 or greater at the end of the next consecutive quarter. Part-time students placed on probation must earn a cumulative grade point average of 3.0 or greater by the end of the next two consecutive quarters.

A student who earns a quarterly grade point average below 2.0 will be dismissed from the University. A student who earns a grade of D or F in a required course must repeat the course. Only one required course may be repeated and the new grade will replace the earlier D or F grade in the cumulative grade point average. Failure to earn a grade of C or better in a repeated course will result in dismissal from the University.

Students placed on academic probation will be so notified by the program director following a meeting of the faculty at which academic progress has been discussed. The letter will state the reasons for placing the student on academic probation and the specific requirements which must be met by the student to reestablish good standing.

Part-time Enrollment

Due to the time demands imposed by practicum courses in each quarter of the program, part-time enrollment is discouraged.

Graduation Requirements

The master of science degree with a major in either speech-language pathology or audiology requires a cumulative grade point average of 3.0 or greater to graduate. All degree requirements must be completed within 36 months from the beginning of the first quarter in which the student is enrolled in the program. The minimum number of quarter hours required for graduation is as follows:

Speech-Language Pathology	102
Audiology	103

Professional Certification

Each of these programs in speech and hearing science provides the basis for certification as either a speech-language pathologist or as an audiologist by the American Speech Language/Hearing Association.

Educational Activities

The Section of Speech and Hearing Sciences provides professional training in speech-language pathology and audiology. The section offers a seven-quarter program leading to the master of science degree with a major in speech-language pathology or audiology. The program is one of the few in the United States which bases its education of speech pathologists and audiologists on the facilities and opportunities offered by an academic medical center. In addition to teaching and supervisory responsibilities for the master of science degree programs in the College of Health Sciences, faculty members cross college lines, involving themselves in articulating the practical and service related aspects of communicative disorders through resident, clerkship, and inservice programs in Presbyterian-St. Luke's Hospital.

Research Activities

Early identification of hearing loss, specifically in the neonate, continues to be a primary

research interest. Effectiveness of the crib-o-gram (COG), an automated hearing screening device, was assessed in intermediate and general care nurseries as part of the Stanford University field test project. Currently, brain-stem auditory-evoked potentials are being examined in an effort to redefine "risk" in infants weighing less than 1200 grams. This effort is part of a collaborative infant follow-up program with the Department of Pediatrics.

The clinical value of bone conduction hearing aids continues to be a research interest as well as auditory and vestibular investigations of patients with focal neurological diseases and the aged. In conjunction with the increased national awareness of communicative disorders in the elderly client, efforts are under way to establish standards for high frequency sensitivity and acoustic reflex parameters in the aged population.

Increased activity in basic speech-hearing research has occurred this past year. Acoustic phonetic research is of particular interest both for speech perception and speech production. Temporal, spectral, and intensity parameters of speech are being examined in children at different stages of speech/language acquisition and in individuals with communication disorders. Findings are being incorporated as therapeutic and diagnostic procedures for children with articulatory disorders. Acoustic and perceptual investigation of hoarseness in certain postpolypectomy patients has been completed. Therapeutic and diagnostic techniques for communicative impairments in right CVA continue to be investigated in addition to questions concerning speech, voice, and swallowing management of head and neck cancer patients.

The development and study of a gestural therapy technique for symbolic disorders relating to stroke has been completed as well as a four-year study concerning the efficacy of cerebellar stimulation for dysarthric, spastic cerebral palsied individuals. A number of novel clinical case studies are being readied for dissemination by staff and graduate students.

Service Activities

Speech pathologists and audiologists in the Section of Speech and Hearing Sciences provide a full range of diagnostic and therapeutic services for the communicatively impaired through the Section of Communicative Disorders, Department of Otolaryngology and Bronchoesophagology. Staff members have demonstrated considerable expertise in

developing specialized evaluative and treatment programs for the communicatively handicapped.

In conjunction with the Head and Neck Cancer Program, techniques have been developed for improvement of speech, voice and swallowing. New procedures for auditory evoked potential testing and electrocochleography have been valuable in the assessment of hard-to-test individuals, in ruling out acoustic neuromas, and in the detection of brainstem lesions. Electromyographic biofeedback has been applied to hyperfunctional voice and stuttering impairments. Other service programs include electronystagmography, spectrographic voice evaluations, comprehensive management of right CVA patients, neonatal hearing testing, and videofluoroscopic evaluation of speech, swallowing and resonance problems. Patient referrals are made from a broad base of health care providers.

Department of Health Systems Management

Philosophy

The Department of Health Systems Management was formally established in 1975. The department's goals are to provide a graduate program for health systems managers; to provide postgraduate and continuing education for health systems managers; and to conduct research in order to validate and to further innovation in the management of health care services.

Admission Requirements

Prospective students should have a baccalaureate degree from an accredited college or university. Basic courses in financial accounting and statistics are required. In addition, courses in economics (macro and micro) and computer science are strongly recommended.

A record of academic excellence is an important consideration. Applicants with graduate credit in quantitative or administrative fields who are seeking to complete their master's degree or obtain a second master's degree are strongly encouraged to apply. Such preparation may reduce the program length.

Each application will be evaluated on an individual basis by the admissions committee.

Curriculum

The structure of the curriculum consists of two components:

- A core set of courses required of all students.
- A set of electives and required courses allowing a student to achieve a concentration specialty.

The *core sequence* consists of 18 courses and totals 70 credit hours. The core courses are scheduled primarily during the first year, but all quarters contain some core courses. The goal of the core sequence is to provide a broad and vigorous foundation of basic and applied skills on which a student can build a concentration specialty. The core sequence covers the following areas:

- Social and behavioral disciplines.
- Factors affecting health and disease.
- Personal health delivery systems.
- Management and administrative skills.

The *concentration sequence* consists of a variable number of courses and totals 20 credit hours. Within general guidelines, the precise form and sequence of concentration courses are student-dependent. However, because of the sequencing of core courses, the concentration sequence occurs in the second year. A student must declare a concentration by the end of the first year. Guidance and consultation are given to each student by a faculty representative from that concentration specialty. The goal of the concentration sequence is to allow the student to acquire both theoretical and practical experience in one of four concentration areas:

- Financial management.
- Human resources management.
- Operations management.
- Planning and public policy.

Experience is acquired through a structured yet flexible sequence consisting of a set of concentration required and elective courses, a graduate seminar (capstone course), and graduate project defense which is required of all students regardless of concentration areas. Students may elect to do a thesis in place of the graduate project with permission of their faculty advisor, concentration sequence director and the department chairperson.

The student progresses from acquiring generic skills, to applying broadly these skills, to obtaining concentration experiences, to integrating concepts in a graduate seminar.

Academic Progression

All graduate students in the Department of Health Systems Management must achieve a grade point average of 3.0 in all course work each quarter to maintain satisfactory academic status. Academic probation shall result when a student's grades fall below a cumulative grade point average of 3.0 or when a student receives a grade of F in any course. Any health systems management student may be placed on academic probation when the student's academic deficiencies are significant as judged by the Committee on Progress and Promotions. A student on academic probation shall remain so until he/she has remedied all deficiencies and met all requirements established by the Committee on Progress and Promotions for removal from academic probation.

Academic Policies

(Additional policies are listed in the College of Health Sciences and in the Academic Information sections.)

Full-time Enrollment

The curriculum is offered full time only. A full-time student is one who is registered for 12 or more hours of course credit per quarter leading toward a master's degree with a major in health systems management.

Graduation Requirements

To be eligible to graduate, a student must have successfully completed all the academic requirements of the Department of Health Systems Management and achieved a minimum cumulative grade point average of 3.0. In order to receive a master of science degree with a major in health systems management, a student must have earned a minimum of 90 quarter hours of credit. Prior to graduation, the Committee on Progress and Promotions shall recommend to the entire department faculty for its approval those students who are to be awarded degrees.

Educational Activities

Members of the faculty have represented the institution by presenting papers or serving as members of the program faculty in symposiums or seminars sponsored by the American Hospital Association, the Hospital Financial Management Association, the American College of Hospital Administrators, the Hospital Management Systems Society, and the Illinois Hospital Association. Each year the Department of Health Systems Management and the Center for Health Management Studies sponsor

the Annual Rush Invitational Seminar on Hospital and Health Affairs. This past year's symposium, "Financing Hospital Services: How Will The Bill Be Paid?" was attended by a record number of health care executives from across the nation.

Research Activities

A major goal of the Department of Health Systems Management is to strengthen its applied research activities. Research is an integral component of the educational process in order that each student acquire a sufficient understanding of health services research to be able to identify and define problems which are amenable to research, evaluate research findings, and interpret their implications for practice.

The Center for Health Management Studies is the focus for the ongoing development of health services research in the Department of Health Systems Management and the Medical Center. Research will enable Rush to continue its national prominence as an innovator and pioneer in health care delivery. The output of the department's health services research can most effectively contribute to the evolution of public policy and to an environment of practice supportive of an efficient and effective health care delivery system. It is possible students will be given the opportunity to participate as research assistants to further develop their skills and perspectives.

Service Activities

Members of the faculty of the Department of Health Systems Management are actively involved in the operation of the Medical Center through such capacities as hospital administrators, health care planners, University administrators, financial managers, clinicians, corporate and labor attorneys, researchers, and data processing managers.

Individuals on the faculty frequently are asked to serve as consultants to hospitals, planning bodies, and other organizations depending on their area of expertise.

Additional contributions to the health care field also include serving as faculty in continuing education programs for health service administrators sponsored by the American Hospital Association, the Hospital Financial Management Association, the American College of Hospital Administrators, the Hospital Management Systems Society, and the American Association of Medical Colleges.

Department of Religion and Health

Educational Activities

The department provides humanistic and theological studies within the colleges, research in the area of religion and health, and an accredited program in clinical pastoral education (CPE) for pastoral personnel.

The Bishop Anderson Professorship has been established for teaching in religion and health. The Department of Religion and Health teaches primarily in the areas of thanatology, ethics, the relationship between religion and illness, and family dynamics. In addition, the department emphasizes the philosophy of medicine.

Accredited by the Association for Clinical Pastoral Education, the department offers basic, advanced, and supervisory education in pastoral care. This program is oriented to graduate theological students, pastors; members of religious orders, or other health personnel who are interested and involved in pastoral care and counseling in the midst of a health crisis. Under faculty supervision, students carry direct responsibilities for ministry within patient care areas on an ecumenical basis which includes a sensitivity to particular parochial practices. Students use clinical pastoral education in preparation for parish ministry, chaplaincy, teaching, pastoral counseling, or CPE supervision.

Basic Clinical Pastoral Education. An intensive 11-week introduction to pastoral care, basic CPE focuses on models of ministry and their effect in patient care. Viewing the patient as a partner in learning, students engage in theological reflection and use pastoral resources with patients and health personnel; they work toward a better understanding of the interface between theology and behavioral sciences in interpreting the human condition. Students may be accepted for this course from any discipline or field of study. The course descriptions in religion and health found in the *Rush University Bulletin* are built on the experience of teaching the materials to theological students. However, there is no inherent difficulty in incorporating nontheological students into the course.

Advanced Clinical Pastoral Education. Advanced CPE is a yearlong residency program for persons who have already completed their basic theological degree, have had pastoral experience and want a pastoral care specialization, such as certification as a chaplain

through the College of Chaplains, American Protestant Hospital Association. Students function as pastoral members of interdisciplinary health teams to develop the capacity to utilize their pastoral perspectives and competence through a variety of pastoral encounters.

Supervisory Clinical Pastoral Education. Supervisory CPE is designed for qualified persons who have demonstrated pastoral professional competence and who want to specialize in supervision in preparation for certification with the Association for Clinical Pastoral Education. Students are helped to develop both a theory and theology of pastoral practice, a philosophy of CPE that includes understanding appropriate education models' theory and practice, and a versatility in using supervisory skills and methods.

The program of religion and health is currently being developed to enlarge upon existing course offerings for interdisciplinary and clinical experiences within the various colleges of the University.

Service Activities

The Department of Religion and Health is responsible for providing pastoral care to patients, their families or supporting persons, and the staff personnel who serve them within Rush-Presbyterian-St. Luke's Medical Center. The department offers round-the-clock religious ministry to patients in the hospital, providing sacraments, church services, individual counseling, and grief ministry to any person who is in need of them. It is available to support members of the student body and staff and to respond to emergencies when needed.

Research Activities

Until recently, the department had been functioning as a service and training department and had not been actively engaged in research. Research is now being incorporated into the training of clinical pastoral education theological students. Areas being investigated include attitudinal changes to life crises following educational process, faith systems and their effect on mobilization of physical resources, religious symbolism and patient/family support systems, and acute grief behavior.

Courses Offered

(For complete course descriptions see section on course offerings.)

REL 453 Illness and Faith
REL 461 Living and Dying: An Introduction
REL 462 Death and Dying
REL 501 The Art of Healing
REL 611 Clinical Case Conference

REL 615 Sermon Preparation and Delivery
REL 621 Personal and Professional Concerns
REL 623 Didactic Presentations
REL 650 Individual Supervision
REL 681 Guided Study or Research
REL 685 Clinical Practice
REL 689 Comprehensive Evaluations

THE GRADUATE COLLEGE

Philosophy

The Graduate College has been established to provide opportunities for students to work with selected members of the University faculty to earn graduate degrees with emphasis on the doctoral level in some of the sciences basic to health care. This limited goal, coupled with highly individualized programs, maximizes the students' opportunities for self-realization and faculty opportunities to share a wealth of information and experiences on a personal basis. The organizational pattern allows a high degree of faculty participation in the educational affairs of the college and incorporates student participation. Each division's faculty members are active in basic medical research and training, providing opportunities for the advanced student to engage in a research program leading to the degree of doctor of philosophy.

The Graduate College faculty strives to provide individualized and flexible scholarly paths for its students. It wishes to avoid arbitrary imposition of uniformity and the encumbrance of unnecessary formality. It believes such an environment will enable students to arrive at the doctoral level invigorated by ideas and high motivation for continued learning. Achievement of such a climate requires adaptation to the needs of students with the limitation in numbers of students implicit in such an approach.

Program

The Graduate College prepares graduate students for the degree of doctor of philosophy which is given in recognition of high attainment in a particular field of scientific research as evidenced by submission of a dissertation showing power of independent investigation and forming a contribution to existing knowledge. An undergraduate record of scholastic excellence is an important consideration for admittance.

The Graduate College also provides excellent research and training opportunities for advanced students who are interested in enrolling concurrently in the college and in Rush Medical College.

Irrespective of undergraduate record, the process of application review searches for evidence of a high level of creativity and scholarly potential in the applicant. Nondegree

students are not admitted with advanced degree objectives and are not eligible to become candidates for advanced degrees. Upon approval by a course director, any individual may audit a course.

In all cases, a student considering application for admission should first establish contact with the director of his/her choice of program to determine divisional requirements.

The student must accept responsibility for meeting all of the requirements for progress and graduation in the division's graduate studies program. These include mastering recommended course work and successfully passing the division's comprehensive qualifying, preliminary, and final examinations. In this regard individualized studies will be programmed to meet the student's need in achieving essential knowledge in preparation toward these examinations and skills for scholarly investigation.

An acceptable thesis must be searched and prepared by the student. Dissertations will be developed through faculty-guided independent research projects.

Administration of The Graduate College programs is based on the formation by the faculty of divisions of graduate study. These divisions may be disciplinary or multidisciplinary in character. They come into existence for the sole purpose of providing graduate education; their continued existence is entirely dependent upon their demonstrated ability to provide such education at high levels of excellence. The divisions of The Graduate College are seen as being flexible and responsive to changing needs and experiences in their areas of education. To that end, the divisions are headed by directors who serve for definite terms and whose reappointment is subject to review at periodic intervals. Each division of graduate study is responsible, through its director, to the dean and the Executive Committee, the latter being made up of directors of all graduate divisions, elected members from the graduate faculty-at-large, and student representatives, with the dean as chairperson.

Although the dean and the Executive Committee hold ultimate responsibility for programs of The Graduate College, the divisions of graduate study retain significant latitude in structuring and administering their own programs.

Academic Progression

All degree seeking graduate students are required to maintain a cumulative grade point average of 3.0 (A=4.0) for graded courses. For all courses taken pass/no pass, each division will establish a standard for the number of failures which can be received before the student is considered to be in academic difficulty.

If a student receives grades in one quarter which put the cumulative grade point average below 3.0, the registrar will send a notice to the dean of The Graduate College who will place the student on academic probation. Such probation may extend for two quarters during which the student must return the cumulative grade point average to 3.0.

Good standing and eligibility for enrollment in the next quarter will be lost if a student is unable to regain a cumulative grade point average of 3.0 at the end of the second probationary quarter.

In a case of loss of good standing the following actions can be taken:

- Dismissal of the student for academic reasons.
- A recommendation from the division director to the Executive Committee to retain the student under specific conditions. These conditions may include limited enrollment for the repetition of selected courses, the taking of an examination, or other activities as may be judged appropriate.

If such conditions of retention are successfully met, the student will be returned to a status of good standing. If such conditions of retention are not met, the student will be dismissed for academic reasons. In addition, the faculty reserves the right to request the withdrawal of any student whose conduct, health, or performance demonstrates lack of fitness for continuation in the degree program.

Dissertation Evaluation

Review of a dissertation will follow the sequence of steps described in the dissertation manual, *Preparation of Theses and Doctoral Dissertations*. Copies of this manual are available in each graduate division and in the Library of Rush University.

Academic Policies

(Additional policies are listed in the Academic Information section.)

The degree of doctor of philosophy is the highest earned degree conferred by Rush University. The Ph.D. is restricted to those scholars who have demonstrated superior

ability in a recognized academic discipline. The Ph.D. degree is not awarded following the completion of any specific number of formal courses; nor is the degree granted on the basis of miscellaneous course studies and research effort. The entire Ph.D. program must be rationally related, should be highly research-oriented, and should culminate in a thesis of literary and scholarly merit which is indicative of the candidate's ability to conduct original research in a recognized field of specialization. Ph.D. programs are directed by professors who work in close association with selected graduate students. In practice, such programs are composed of formal courses, guided individual study in a chosen field or discipline, study in such cognate subjects as may be required by the candidate's advisory committee, and original research that serves as the basis of a scholarly thesis.

For the most part, specific regulations governing the process which results in final award of the degree are developed by the graduate divisions responsible for the candidate's progress. While such regulations may differ in detail from one division to another, each division's program and regulations must be reviewed for approval by the Executive Committee of The Graduate College. In all cases, graduate divisions are required to be explicit and clear about regulations that will affect the candidate. This must be stringently observed in divisional regulations concerning selection of principal advisors, advisory committees, and a plan of study. Similarly, divisions will be explicit and clear concerning procedures surrounding qualifying, preliminary, and final examinations and will also be responsible for providing the candidate with the help and information needed to plan and conduct the thesis research.

At the same time, a major responsibility of the student is to become familiar with the regulations and expectations of his/her chosen division. These regulations and expectations are included in the *Rush University Bulletin* within the section devoted to each divisional program. It is considered to be the student's responsibility to remain knowledgeable about these programmatic regulations as they are set forth; they may change from time to time.

Some divisional programs may require the student to take one or more courses at a university other than Rush. It is the responsibility of the director of the graduate division concerned to make arrangements enabling satisfaction of such course requirements and to inform the student, prior to admission, of

such costs and special arrangements as may be necessary.

Academic policies are college wide. All programs are subject to changes required to conform to the general policies and provisions of The Graduate College adopted by the Executive Committee from time to time. However, major changes in policy shall not retroactively affect students already admitted to a program.

Changing programs, incomplete grades and withdrawals are handled on an individual student basis by the prospective division director and the faculty, with final approval of the Executive Committee.

Credit Hours

Rush University is on a quarter system. Each quarter is at least ten weeks in length. An examination period is provided at the end of each term and most classes give a final examination during this time.

The quarter hour is the unit used by the College of Nursing, the College of Health Sciences and The Graduate College to determine credit for courses taken. As a general rule one quarter hour represents one lecture hour, two hours of small group discussion or three laboratory hours per week.

Full-time and Part-time Enrollment

Full-time graduate residence requires at least 12 and not more than 16 quarter hours per quarter. Outstanding students may petition the division director and the dean to register for additional courses. Written approval is required. Degree candidates must also obtain from the division director and the dean written permission for less than full-time residence.

Transfer of Credit

Graduate level courses taken at other institutions may be applied to the doctor of philosophy degree at Rush if they are judged to meet divisional requirements, subject to the approval of the major advisor and the division director. Credit in excess of nine quarter hours requires approval by the division director and the dean. Grades from courses transferred from another institution are not recorded on the student's academic record; the number of credits is recorded and added to the cumulative number of credits.

Pass/No Pass

All elective courses, seminars, and research courses are graded pass/no pass in The Graduate College.

Examination Policy

The examination policy is the responsibility of the individual course director who will inform students of examination requirements for that particular course. A period at the end of the quarter is provided for examinations. This period may be used as the course director chooses. The Office of the Registrar publishes the final examination schedule each quarter.

Residence

Years of residence required by divisional programs are based on the definition that a student must be registered for a minimum of three subjects in each of three quarters to satisfy The Graduate College requirement of a resident year. The Graduate College minimum residency required of all graduate students is registration as a full-time student for eight quarters of at least 12 credit hours each. Unless granted a formal leave of absence, regular graduate students who fail to register for three quarters in each academic year are considered to have withdrawn from the University and must compete for readmission with other applicants.

Extension of Study

Maximum enrollment is seven calendar years. Any approved leave of absence will be excluded from this figure. A student may petition for an extension of the overall time limit to the division director and the Executive Committee. If such an extension is granted, the student will be expected to enroll full time for each remaining quarter in residence. If a student proposes to maintain active status in The Graduate College while at another location, approval by the division director and the Executive Committee will be necessary. Such a student will enroll each quarter with the Registrar of Rush University for zero hours of credit, and will be charged an enrollment fee of \$75.

Leave of Absence

A student who wishes to leave the University for an indefinite period of time may submit a written request specifying the circumstances and period of time involved to the division director. The director will forward the request with a recommendation to the Executive Committee for final action. The recommendation should include all conditions of the leave and of the reentry into the program. A formal notice of leave of absence can only come from the dean of the college.

Withdrawal from the University

Students planning to withdraw from the University voluntarily must complete a form available in the Office of the Registrar. The student will obtain several signatures and return, all Medical Center materials, the identification card, and name pin. Withdrawal is final once all

Medical Center bills have been paid and the completed form is submitted to the Office of the Registrar.

Readmission

Any student who has withdrawn from a program or has not been enrolled for two consecutive quarters or any dismissed student may apply for readmission by submitting an application for this purpose with a fee of \$30 to the admissions office. An interview may be required. Reentering students must meet the conditions for reenrollment stated in their dismissal or reentry acceptance letter and all policies, requirements and course sequence in effect at the time of reentry. The student will pay tuition and fees at the rates in effect at the time of reenrollment. Application deadlines may vary by division.

Division of Anatomical Sciences

Philosophy

The Division of Anatomical Sciences offers a program of graduate study at the doctoral level. The curricular component is intended to promote the student's knowledge of biological structure at the gross and microscopic levels along with an appreciation for the functional organization and mechanisms of development.

It is the purpose of the graduate study program to provide background and teaching experience in gross anatomy, histology, and neuroanatomy; to foster the student's conceptual growth through elective courses in cytology, developmental biology, regeneration, biomechanics, reproductive biology and endocrinology, and neurobiology; and to define problems which are amenable to experimental or applied studies as a basis for the student's dissertation research.

The program is dedicated to preparation of the student for roles in teaching and research. As a teacher, the professional anatomist is challenged with participation and organization of courses in medical and graduate curricula as

well as participation in medical conferences requiring expertise in specialized areas. As an investigator, the graduate must acquire independence and show resourcefulness in applying anatomical methods to the broader scope of biomedical problems.

Admission Requirements

The Division of Anatomical Sciences seeks students who can demonstrate motivation toward teaching and research as well as a capacity for independent study in their undergraduate or graduate education. Because of the tutorial nature of graduate study in the Department of Anatomy, careful consideration will be given to possibilities for the expansion of the student's potential area of interest with respect to the expertise and resources of individual faculty members.

Applications are invited from students who have been awarded the baccalaureate degree; students who have satisfactorily completed other graduate work; or superior medical or other professional students at Rush who wish to pursue concurrent graduate study.

An undergraduate record with performance of at least a B (A=4.0) or equivalent level in the major field of study is required. The major, pref-

erably in biology or chemistry, should include laboratory experience; courses in comparative anatomy and embryology are recommended. The Graduate Record Examination (GRE) is recommended in conjunction with either the biology or chemistry subtests.

Personal interviews are generally required of applicants whose credentials demonstrate acceptable academic and test performances. The purpose of this interview is to provide the applicant with a better idea of departmental activities, and to assess his/her basic areas of interest.

Specific admission requirements may be waived at the discretion of the graduate Advisory Committee in anatomy. Advanced placement credits, also subject to approval, are limited to a maximum of one academic year.

Since the course cycle begins in the fall quarter, applicants are ordinarily expected to complete their files by May 1 preceding the intended date of admission.

Curriculum

The first- and second-year curricula are devoted to anatomy course work and to complementary electives selected from cell biology, physiology, biochemistry, pharmacology and immunology. Pedagogic experience in anatomy is provided through teaching assistantships during the second year.

An independent study during the second quarter of the first year is designed to direct

student interests toward development of a project to be conducted in the summer following the first year. This preliminary project allows the student to apply anatomical methods to experimental objectives established in collaboration with a supervising faculty member. This tutorial is intended to help the student develop lines of interest for additional elective course work and thesis study.

After completing the course requirements, the student must take the preliminary examination in order to qualify for degree candidacy. The first part of this examination consists of a written, comprehensive examination on course material. The second part, an oral examination, is taken after the student's thesis proposal has been approved.

Upon satisfactory completion of both parts of the preliminary examination, the candidate devotes his/her time entirely to thesis research and writing of the dissertation. The dissertation must be an original experimental or applied study that is defended before the student's principal advisor and thesis committee.

The program requires a minimum of 144 quarter hours of credit. The Division of Anatomical Sciences maintains a minimum residency requirement of eight quarters of full-time registration in The Graduate College. This residency requirement also applies to students who have received advanced standing.

Curriculum: Core Anatomy Courses

Year 1		Year 2	
Fall Quarter		Fall Quarter	
ANA 471 Human Anatomy I	8	ANA 602 Advanced Anatomy*	3
ANA 451 Histology	5		
Winter Quarter		Winter Quarter	
ANA 472 Human Anatomy II	8	ANA 602 Advanced Anatomy*	3
Spring Quarter		*Teaching Assistantships	
NEU 451 Neurobiology	7		
ANA 581 Appchs. & Mthds. in Mrphlgc. Res.	4		
Total Core Anatomy Courses		38 quarter hours	
Electives		34 quarter hours	
Total Course Requirements		72 quarter hours	
Total Research Hours		72 quarter hours	
Total Hours		144 quarter hours	

Three advanced topics in anatomy (8-12 quarter hours total) are required. These are delivered as seminars, tutorials or, in some instances, as laboratory instruction. Courses offered by the Division of Cell Biology (CEL 501, CEL 512 and CEL 522) are recommended so that four hours from this course series may be applied to the major advanced topic requirement.

The balance of elective hours are subject to approval by the Division of Anatomical Sciences. Two minor electives must be taken outside of the division.

Journal Club

Participation in the departmental journal club is expected each quarter. This club exposes students to current topics in anatomical research and provides opportunities to discuss problems with established investigators.

Concurrent M.D./Ph.D. Program

The exceptional student with a research orientation may wish to pursue both the M.D. and Ph.D. degrees. Coordination of Ph.D. and medical study is especially feasible in the Division of Anatomical Sciences since introductory course work for the Ph.D. degree can be satisfied within the medical curriculum.

Completion of both degrees requires a commitment of at least one to two years beyond that necessary to complete the M.D. degree. A student in such a combined program would ideally take the year following the second year of course work to complete any necessary electives, the preliminary examination and to continue the thesis research initiated in the summer after the first year. Flexible scheduling in the last two years permits the student to complete simultaneously the anatomy thesis and medicine clerkships.

These arrangements with the medical school can be adapted to suit individual needs.

Academic Policies

(Additional policies are listed in The Graduate College and in the Academic Information sections.)

Assessment of Progress

The student's progress will be assessed continuously based upon performance in the courses taken and upon evaluations by faculty members.

Students who fail to maintain a B average will be placed on academic probation. Failure

to improve for two consecutive quarters of probation may be cause for dismissal.

The preliminary examination, taken after the second year, tests the student's abilities to synthesize material, solve problems and communicate both verbally and in writing. It consists of a written comprehensive based on course work, and an oral examination emphasizing the student's thesis proposal.

Guidance

Each entering student will be guided in his/her course of studies by the division director with the assistance of the Graduate Studies Committee until such time as the student determines a course of thesis scholarship. At this time, the student must select a faculty member who agrees to serve as the principal advisor in cooperation with a thesis committee.

Principal Advisor. Every graduate student must have a principal advisor holding appointment in the Division of Anatomical Sciences of The Graduate College. The responsibilities of the principal advisor include the following:

- Ensure that the student's graduate course work satisfies the division and The Graduate College requirements.
- Assist the student in the development of a thesis proposal.
- Provide guidance in the dissertation research and aid in finding laboratory and funding resources to complete the study.
- Help organize the preliminary examination and thesis defense.

Thesis Committee. This advisory body will consist of the principal advisor, two associate advisors, and the director of the graduate division. It assists both the student and principal advisor and serves as a liaison to the Graduate Advisory Committee. If problems arise that cannot be resolved by the thesis committee, the student may appeal to the Graduate Studies Committee or division director.

Preliminary Examination

The preliminary examination, consisting of a written comprehensive and an oral examination, must be passed in order for the student to become a degree candidate. The written comprehensive is taken after completion of the course requirements and tests the ability to synthesize factual material, to present concepts and to communicate in writing. After the student passes the written comprehensive and submits a thesis proposal acceptable to the Graduate Advisory Committee, at least four faculty members are appointed by the division director to

conduct the oral examination. Should the student fail to pass either portion of the preliminary examination, reexamination may be held within three months in accord with recommendations of the Graduate Studies Committee. Failure to pass the second examination may be grounds for dismissal.

Dissertation and Thesis Defense

Dissertation. The dissertation is a scholarly work based on an original thesis project. Its format and review by the advisory committee and dean must comply with the requirements of The Graduate College.

Thesis Defense. The final examination may be taken upon acceptance of the dissertation by the dean of The Graduate College and must precede the projected date of graduation in accordance with a schedule determined by The Graduate College.

Oral defense of the dissertation serves as the final examination in partial completion of the requirements for the doctor of philosophy degree.

The examining committee consists of a minimum of five faculty members approved by the division director and Graduate Studies Committee. At least three examiners, including the student's principal and associate advisors, will be selected from within the division. Two examiners may be selected from outside the division preferably, though not necessarily, from outside the University. Distinguished scientists may be invited as guests of the department to examine the dissertation and to participate in the final oral defense.

Passing the final examination is based upon the recommendation of the majority of the examiners. In the event that the student fails to pass the final examination, the student may appeal to the dean of The Graduate College who, upon consultation with all parties concerned, may recommend a course of action to be taken.

Research Activities

Modern research and teaching areas in the Academic Facility have been designed specifically to meet the needs of both basic medical science education and research. Individual faculty laboratories are complemented by modern facilities for both scanning and transmission electron microscopy and a bioinstrumentation laboratory. Affiliations also exist with the Department of Ophthalmology, and with orthopedic surgery where one of the major gait

laboratories in the country—the John L. and Beatrice Keeshin Human Motion Research Laboratory—is located.

Research in neurobiology encompasses aspects of nerve injury and repair, plasticity in the development and regeneration of the central nervous system, and problems in the pathobiology of muscle. Mechanisms of pattern formation and histogenesis are being studied in regeneration of amphibian limbs. Damage produced by inflammation or by disturbances in blood flow is being studied in relation to the pathology of eye disease. Structural and physiologic studies on the lens are directed to the function of membrane specializations in cell communication. The organization of the red cell membrane is being studied in relation to pathological deformations and the cytoskeletal components of the erythrocyte. Studies on the biomechanics of locomotion in health and disease are conducted in the gait laboratory.

Individual faculty are available to discuss their research interests with prospective applicants and to provide documentation of current activities.

Division of Biochemistry

Philosophy

The department has defined its goals in regard to its graduate program on the basis of the expertise of its faculty members. They may be stated as follows:

To provide high quality education, practical training, and research opportunities to students who are interested in practicing biochemistry in one of the following three areas: basic and applied research in molecular-medical biochemistry; research in the biochemistry of cell function; and clinical biochemistry both in the service laboratory and in investigating the factors involved in the etiology of disease. In other words, the goal is to develop health professionals who will substantially improve health care delivery to the public.

Research strengths and other expertise of the department lie in certain well-defined areas, such as mammalian tissue culture methodology, basic research in connective tissue and metalloelement biochemistry and clinical biochemistry. "Medical biochemistry" is perhaps the most fitting single term that can describe the department's scholarly direction. The tissue culture or cell biochemist attempts to explain

how cells interact with their environments and with each other, and what causes changes in a cell's physiology, thus making it malignant or aberrant in another way. The classical biochemist, on the other hand, is concerned with fundamental biochemical processes on the molecular level, such as the mechanism of collagen biosynthesis and degradation. It is the classical biochemist's discoveries that are often applied by the clinical biochemist and the cellular biologist to advance their own fields of endeavor.

Clinical biochemists are frequently entrusted with the management and operation of laboratories in a hospital, university, medical school or a medical institute, and in that capacity have the opportunity to interact with other health professionals such as physicians and nurses. The clinical biochemist, through his/her research activities, furthers the understanding of the disease process in the human being.

Admission Requirements

- A bachelor's degree in any scientific area. Specific course requirements are as follows: chemistry—one year each of general chemistry and organic chemistry plus one semester or two quarters each of quantitative analysis and physical chemistry; biology—one year of general biology plus one year of intermediate or advanced undergraduate biology; mathematics through calculus; physics—one year.

Under unusual circumstances, students may be accepted with less than the above minimum requirements with the understanding that such deficiencies are to be made up during the first year of graduate study and that such make-up work may prolong their residency at Rush.

- A minimum grade point average of 2.75 ($A=4.0$) in all science courses taken.

- Graduate Record Examination (GRE) aptitude test and advanced tests in biology or chemistry. There is no minimum score required. However, among equally qualified applicants, those with higher GRE scores will receive preference.

- Letters of recommendation. Three letters are required from persons qualified to judge a student's potential as a scientist. The referee, whose comments will be taken most seriously by the Graduate Program Committee of the department, will have had extensive contact with the student as a teacher of science or a supervisor in a science-related work situation.

- Students are normally admitted in the fall quarter but the Graduate Program Committee may, at its discretion, recommend admission for the winter, spring or summer quarters.

Curriculum

Introduction. To better meet the objectives delineated above, the curriculum has been formally divided into three tracks: molecular-medical, supramolecular, and clinical biochemistry. The admission requirements are identical for all three tracks, and the first- and a part of the second-year course sequence is identical for all students (see chart). Following this period, during which the students take their basic biochemistry theory and laboratory techniques, immunology, cell biology, pharmacology, and physiology, the students become involved in formal instruction in their areas of specialization. These are finished by the end of the second year of graduate study. During the summer following the second year of residence, the student normally takes the preliminary examination, which is designed to test the fundamental knowledge developed during the first two years in graduate school. If the examination is passed, the student proceeds to concentrate on his/her research, although taking further formal electives in the student's area of interest is strongly encouraged. The thesis sequence involves the presentation of a proposal to the thesis research committee and thesis examination by the thesis examination committee.

Required Didactic Courses for the Doctorate. Any portion of this may be waived on a case-by-case basis by the Graduate Program Committee.

All biochemistry tracks (molecular-medical, supramolecular, and clinical biochemistry):	
Biochemistry 501, 502, 503	15 quarter hrs.
Physiology 451, 452	10 quarter hrs.
Cell Biology 501	2 quarter hrs.
Pharmacology 501	5 quarter hrs.
Immunology 501	5 quarter hrs.
Biochemistry 581	4 quarter hrs.
Biochemistry 595	6 quarter hrs.
TOTAL	47 quarter hrs.

Suggested Programs Satisfying Minimum Requirements for the Doctorate in Biochemistry

Year of study	Molecular-Medical Biochemistry			Clinical Biochemistry			Supramolecular Biochemistry		
	F	W	S	F	W	S	F	W	S
1	BCH 501 (5) PHY 451 (5) BCH 595 (1) BCH 699 (1)	BCH 502 (5) PHY 452 (5) CEL 501 (2) BCH 595 (1)	BCH 503 (5) BCH 581 (4) BCH 595 (1) BCH 699 (2)	Identical to Molecular- Medical Biochemistry track			Identical to Molecular- Medical Biochemistry track		
2	IMM 501 (5) PHR 501 (5) BCH 590 (3) BCH 595 (1)	Elective (4-5) BCH 590 (3) BCH 595 (1) BCH 699 (3-4)	Elective (4-5) BCH 590 (3) BCH 595 (1) BCH 699 (3-4)	IMM 501 (5) PHR 501 (5) BCH 611 (3) BCH 595 (1)	BCH 612 (3) BCH 614 (3) BCH 595 (1) BCH 699 (5)	BCH 613 (3) BCH 615 (3) BCH 595 (1) BCH 590 (3) BCH 699 (2)	IMM 501 (5) PHR 501 (5) BCH 621 (3) BCH 595 (1)	BCH 622 (3) BCH 624 (3) BCH 595 (1) BCH 699 (5)	BCH 623 (3) BCH 625 (3) BCH 595 (1) BCH 590 (3) BCH 699 (12)
Preliminary Examination									
3	BCH 590 (3) BCH 699 (9)	BCH 590 (3) BCH 699 (9)	BCH 590 (3) BCH 699 (9)	BCH 590 (3) BCH 699 (9)	BCH 590 (3) BCH 699 (9)	Elective (3) BCH 699 (9)	BCH 590 (3) BCH 699 (9)	BCH 590 (3) BCH 699 (9)	Elective (3) BCH 699 (9)
4	BCH 699 (12)	BCH 699 (12)	BCH 699 (12)	BCH 699 (12)	BCH 699 (12)	BCH 699 (12)	BCH 699 (12)	BCH 699 (12)	BCH 699 (12)

Notes: • Registration will take place for summer sessions (quarters). Graduate students would normally register for 12 quarter hours of BCH 699, although didactic courses such as BCH 590 might also be offered occasionally.

• Students may register for elective didactic courses beyond those required at any time after consultation with their advisors and track coordinators. Credit hours for BCH 699 would then be correspondingly lower. Electives that are strongly recommended are in the areas of microbiology-virology, statistics, data processing, and radioisotope techniques.

Additional Requirements

Molecular-Medical Biochemistry Track Only:

Biochemistry 590 18 quarter hrs.

Electives 8 quarter hrs.

Clinical Biochemistry Track Only:

Biochemistry 611, 612, 613 9 quarter hrs.

Biochemistry 614, 615 6 quarter hrs.

Biochemistry 590 9 quarter hrs.

Supramolecular Biochemistry Track Only:

Biochemistry 621, 622, 623 9 quarter hrs.

Biochemistry 624, 625 6 quarter hrs.

Biochemistry 590 9 quarter hrs.

Academic Policies

(Additional policies are listed in The Graduate College and in the Academic Information sections.)

Admission and Initial Progress

Upon being admitted to the program, the student follows the prescribed course work during the first year. As soon as possible after matriculation, the student decides which track he/she will follow and selects a principal advisor. If during the first two years a mutually agreeable advisor cannot be found, the student must leave the program. At any time during the first year, the student may begin his/her research program with the advice of his/her advisor.

Preliminary Examination

This examination is given to students normally after a two-year period in the program. If this examination is passed, the student formally presents his/her project to his/her thesis

research committee. The preliminary examination, designed to test the student in the fundamentals of biochemistry and related basic medical sciences pursued in the first two years of the program, consists of written and oral portions. The student's advisor, with the consent of the track coordinators, recommends to the Graduate Program Committee that the student is ready to take the examination. The latter appoints the membership of an examining committee of six professors with the student's advisor as chairperson and at least two members of the committee being from outside the department. The examining committee, when approved by the chairperson of the department, constructs and administers the written portion of the preliminary examination to the student and follows this by an oral examination. The results of the written and oral examinations, taken as a whole, determine if a student has passed the preliminary examination. The chairperson of the examining committee informs the Graduate Program Committee of the result. If the student has not passed, a report by the examining committee signed by all members thereof, describes the committee's recommendations, e.g., the student should not be allowed to continue in the doctoral program, the student should be given another opportunity to retake the preliminary examination after appropriate remedial work, or another course of action deemed appropriate in a particular case. The Graduate Program Committee transmits the examining committee's recommendation with or without its own comments to the chairperson of the department for approval.

Thesis and Thesis Examination

After the student passes the preliminary examination, the Graduate Program Committee, with the approval of the chairperson of the department, appoints a thesis research committee consisting of the student's advisor, the two track coordinators, and two professors, one of whom must be from another department, to guide the student's research progress. The student submits to the thesis research committee a research proposal specifying his/her research objectives, methodology to be used, and significance of the project. If the proposal is approved, the approval is transmitted to the Graduate Program Committee. If not, the student and his/her advisor are asked to revise the proposal.

When the research project has achieved the desired objective as judged by the student's thesis research committee, the student compiles the first draft of his/her thesis. This is conveyed to the Graduate Program Committee for reading. If the quality of the work is deemed adequate, the Graduate Program Committee, with the approval of the chairperson of the department, appoints a thesis examination committee for the student. It is anticipated that the thesis research committee with one or two additions will also function as the thesis examination committee. The thesis examination committee guides the student in preparing the final form of his/her thesis and administers an oral examination, where the student is required to defend his/her work. At the discretion of the thesis examination committee, the student may be requested to present a seminar in lieu of the defense examination. The thesis examination committee reports its decision (pass or no pass) to the Executive Committee of The Graduate College, which recommends that the student graduate if the defense is successful. In case of a no pass, the chairperson of the thesis examination committee is to prepare a report with a recommendation for further action.

Quarter Hours Required

A full-time graduate student is registered for 12 or more hours of credit each quarter. A total of 146 quarter hours with approximately 12 hours per quarter in residence is required for graduation. The Graduate Program Committee may, at its discretion, recommend a waiver to the Executive Committee of The Graduate College of any portion of this requirement for students with previous graduate work at Rush or elsewhere.

Grade Requirements

Students must maintain a GPA of 3.0 in order to remain in the program, to be admitted to the preliminary examination, and to graduate. Electives, seminars and research courses are graded pass/no pass. All other courses must be taken for a letter grade. At the end of each academic year, the student's academic progress is reviewed by the Graduate Program Committee. If the GPA is found to be below 3.0, the committee may put the student on probation by giving the student an opportunity to correct the defect within two succeeding quarters, and if the student does not cure the defects within that time, dismissal shall be mandatory. Alternately, the committee may recommend the student's dismissal from the program.

A student receiving a grade of fail in a non-required elective is reviewed by the Graduate Program Committee to decide how the failure is to be rectified.

Time Limit

For the completion of the doctoral program no more than seven years shall be required though quarter by quarter extensions may be granted via petition to the Graduate Program Committee.

Research Activities

The faculty of the Department of Biochemistry is currently involved in several areas of investigation. Some of these research programs are joint efforts with other departments, giving the student an opportunity to interact with researchers of other disciplines as well as clinicians. Major research areas are the following:

- Connective tissue biochemistry focusing on the structure and function of the various molecular components such as proteoglycans and collagen.
- Liver biochemistry involving the study of liver regeneration and various changes in serum in response to liver disease.
- The biochemistry of human milk proteins and other components, particularly those showing growth-promoting activity toward the *Bifidobacteria*.
- Iron metabolism in mammalian as well as microbial systems.
- Cancer biochemistry, paying particular attention to the control of tissue invasion by tumors, and the mechanisms of tumor induction in the prostate and breast.

- The biochemistry of the fibrinolytic system studying the plasminogen activators from tissues.

- Endothelial cell physiology, including the interaction between platelets and the cellular and molecular elements of the blood vessel, the involvement of prostaglandins in the thrombotic process and cardiovascular disease, and the regulation of endothelial cell proliferation.

- Studies on the structure and synthesis of the red blood cell membrane lipids.

- Neurochemistry concentrating on the role of various drugs in combating cerebrovascular disorders.

- Application of biochemistry to medical problems.

Service and Clinical Activities

The department has several faculty members who are involved in the operation of hospital clinical biochemistry laboratories and who perform basic and development research in the area of clinical biochemistry. Such laboratories are available for student training and, on a limited scale, student employment. The clinical biochemistry track students will receive a major portion of their training in the various clinical biochemistry laboratories now served by the department's faculty members.

Concurrent M.D./Ph.D. Program

A student may apply for admission to the concurrent M.D./Ph.D. program in biochemistry either at the time of medical college application or later, after admission while enrolled in the medical college.

The program is tailored to an individual student's needs. Normally the student first takes the required preclinical courses at Rush Medical College and passes the National Board of Medical Examiners (NBME) Part I Examination. The student may then begin work in the graduate program, which would normally last for two to three years. Following the completion of graduate work, the student resumes medical studies in the clinical clerkships. Alternatively, the medical student may complete the medical school requirements for graduation before starting work toward the Ph.D. degree.

The participant in the concurrent M.D./Ph.D. program will be expected to fulfill the same departmental requirements as the Ph.D. student: formal course requirements at the appropriate grade level; passing of the preliminary examination; and the submission of a high quality thesis based on original research work.

Many formal course requirements for the Ph.D. degree will be met by taking the prescribed Rush Medical College courses, e.g., biochemistry, pharmacology, physiology, immunology, and electives; however, these courses will be evaluated by letter grade rather than on the honors, pass, fail system.

The manner in which the student will meet any additional formal course requirements as specified by the Graduate Program Committee will be determined on an individual basis. It is expected that all course requirements will be met by the M.D./Ph.D. program participant during the first year in the graduate program and that the preliminary examination will be taken at the end of the first year. The remainder of the student's time is to be spent in research activities. The overall M.D./Ph.D. program would normally require six to seven years to complete.

Division of Cell Biology

Service

Through its director, the division assumes the professional administrative responsibility for the electron microscopy laboratory of The Graduate College and its program. Training in use of the equipment is available at all times for those using the facility for research purposes.

The Program

Generally, cell biology explores the structural organization and functional integration within cells. As a field of study, its knowledge and techniques extend to all the specialized fields of the health sciences. The purpose of the Division of Cell Biology is to supplement understanding of such basic knowledge and techniques for students in the health sciences. The division encourages integration of the resources of people and facilities throughout Rush University to produce a comprehensive study of the cell. Such a purpose must be multidisciplinary, for cell biology spans many departments within the University, including anatomy, biochemistry, immunology, microbiology, pathology, pharmacology, and physiology.

Historically, the electron microscope has had a major impact on the growth of cell biology. The teaching of the division is centered around the electron microscopy laboratory of The Graduate College. Students will study the ultrastructure of the cell and its organelles in electron micrographs. But it is most important that they

learn about the function of the organelles in a multidisciplinary fashion. Thus, the supramolecular structure and biochemical ultrastructure of the cell constituents are emphasized. Advanced students will learn the technical skills necessary for pursuit of research projects involving cell biological techniques. Teaching is organized with courses in cell biology and electron microscopy. Students taking such courses may use them as credits toward their Ph.D. requirement in other graduate divisions of Rush University, subject only to the regulations of those divisions. As an additional activity, the division sponsors a seminar series of outside speakers instituted to foster multidisciplinary exchange and to cover material not available within Rush University.

Courses

The courses available are subject to demand and limitation to graduate students within the graduate, medical, nursing (i.e. graduate nurses), and health sciences colleges.

Division of Immunology Philosophy

The goal of this program is to train individuals for careers as independent investigators in immunology who will contribute to the advancement in understanding immunological mechanisms in health and disease.

Admission Requirements

Students who have received the baccalaureate, master's, or doctoral degree may apply. Although not essential, it is recommended that students wishing to enter the immunology program should have achieved a high level of competence in biology, mathematics, and chemistry. It is important that applicants be adequately prepared to engage directly in graduate study and research.

Candidates usually enter the program in the fall quarter; applications should be submitted as early as possible and no later than April 1. Applications will be evaluated as they are received.

Applicants for admission to the program will be evaluated initially by the departmental admissions committee and then the departmental faculty. Final approval for admission will be made by The Graduate College Executive

Committee. Considerations for admission will include overall academic record, the recommendations of the sponsors, results of a recent Graduate Record Examination or its equivalent, and the description of the applicant's own aspirations and interests. Personal interviews will be arranged for potential candidates after the preliminary screening. Students will be admitted into the program at levels other than first year only under exceptional circumstances; this will require approval by the faculty of the Division of Immunology and by The Graduate College Executive Committee.

Curriculum Requirements

A core program of courses encompassing major aspects of immunology given concurrently with laboratory tutorials and pre-thesis research comprises the first two years.

Curriculum: Immunology

Year I

Fall

Basic and Clinical Immunology: Lecture
Basic and Clinical Immunology: Tutorial
Biochemistry

Winter

Immunogenetics and Cellular Immunology I*
Structure and Immunobiology of Membranes*
Biochemistry

Spring

Cellular Immunology II and Tumor Immunology*
Complement*

Year II

Fall

Elective courses, including Biostatistics,
Histology-Pathology, Pharmacology and
Topics in Microbiology

Winter

Immediate Hypersensitivity and Inflammation*
Molecular Immunology*

Spring

Phagocytosis and Host Defense*
Clinical Immunology*

*These courses are offered in alternate years and may be taken in the first or second year, depending upon the schedule.

The credits for each quarter total 15 comprising the didactics plus research.

Academic Policies

(Additional policies are listed in The Graduate College and in the Academic Information sections.)

General Information

A minimum of three years of full-time (four quarters per year) study and research or the equivalent in part time, is required to satisfy the residency requirements of this program.

Upon admission each student will be assigned by the program director to an individual tutor who will be responsible for guiding the student's academic activities during the first 12 months when the selection of a principal advisor for thesis research should be made. During the first 12 to 24 months the student will carry an academic program designed for his/her own requirements through frequent discussion with the student's tutor and principal advisor, and with the Graduate Advisory Committee that should provide the student with a thorough grounding in immunology and appropriate related basic sciences and practical experience in several laboratories of the division faculty. Following the demonstration of competency in the areas of immunology encompassed by the core curriculum and the acceptance of a thesis proposal, students will then essentially devote themselves full time, with participation in general departmental activities, to their thesis research. The research program will be carried out under the guidance of a designated principal advisor and a thesis committee. Following agreement by the student, advisor, and thesis committee that a suitable stage in the research program has been reached, the student will prepare and present a dissertation demonstrating the ability to carry out a research program and to contribute an original proposal to the area of investigation.

All students must meet the basic requirements of The Graduate College. Passage of the preliminary examination as partial fulfillment for entrance into candidacy for the Ph.D. degree is dependent upon demonstrated competence in the field of immunology. This can be achieved by participating in the recommended core program of lecture and tutorial courses of both a basic and advanced nature which may be supplemented by independent study. Other requirements as specified by the student's thesis advisory committee may be met by completion of lecture, tutorial or laboratory courses in other divisions of The Graduate College.

Courses in microbiology, cell biology, pharmacology, histology, pathology and statistics are considered relevant to training in immunology; these are available as part of the student's academic program but are not considered essential for all students. It is anticipated that courses in some subjects considered essential for a particular student's academic program will not be available in The Graduate College. Such requirements may be met either by special arrangement with the faculty of other institutions or by enrolling in or auditing such courses available at other institutions within the geographical area. Faculty assistance in the identification of these courses and supporting tutorial instruction will be arranged. Involvement also is required in the immunology department research conferences, journal clubs, and tutorial discussions as may be specified from time to time by the Graduate Advisory Committee.

Assessment of Progress

The academic progress of each student is continuously assessed by each faculty member with whom the student has worked. The use of conventional examinations or tests is encouraged but is not required, and instructors are free to use whichever system of assessment they wish to apply, provided their criteria are made explicit.

Evaluation of the overall progress of a student is based on reports received at least biannually from the tutor or principal advisor and the thesis advisory committee. The reports describe the status of the academic program, the progress of research and laboratory activities and identify projected requirements for the remainder of the program.

It should be stressed that the purpose of such assessment and examination is primarily to aid the student in achieving academic goals by determining depth of understanding of the several areas of study and, when necessary, identifying problems in order to enlist the aid of other faculty to assist the student in his/her training. Considerable importance in this continuous assessment is placed on the student's ability to communicate. Guided development of the skills required for both literary and verbal presentation of knowledge and ideas, as well as their formulation, is an important responsibility of the faculty in this program.

Preliminary Examination

A comprehensive written preliminary examination is given at the end of the second year of study. This examination covers the recommended core program of courses in immunology and successful completion is required for proceeding into candidacy.

Graduate Advisory Committee

A committee consisting of four or five elected faculty members, the chairperson of the Department of Immunology/Microbiology and the program director (appointed by the chairperson) shall participate in the administration of this program. The functions of this committee are the following: to assist each student in the design of an appropriate academic program; to guide both the student and faculty in advisor selection and in the appointment of the thesis advisory and thesis examination committees; to ensure the continued satisfactory progress of the student; and to initiate any necessary changes in or additions to this program. The Graduate Advisory Committee also shall review biannually the progress of each student throughout the program and shall report annually to the faculty of the division on the progress of each student.

Thesis Advisory Committee and Thesis Proposal

It is expected that within five quarters of admission the student shall have identified an area of specialization and a principal advisor with whom to carry out his/her research activities. Concurrent with the development of a research program and within 11 quarters of admission, the following three steps should be taken and accepted by the Graduate Advisory Committee for the student to continue in the program:

- Formulation of a thesis advisory committee that shall have four or five members including the principal advisor, two or three faculty members, and one other individual with recognized expertise in the candidate's field of interest who is selected jointly by the candidate and principal advisor. This individual, not of the division, should be a faculty member of an institute of higher education, active in research in the area of investigation and should demonstrate willingness to maintain active contact with and advise the committee and student concerning the progress of research training for the duration of the candidacy. When additional advisors are required, these also shall be members of the thesis advisory committee. The chairperson of this committee

shall be an active member of the Department of Immunology/Microbiology.

- Presentation to and acceptance by the thesis advisory committee of a thesis proposal that should constitute a scholarly outline of work leading to research that will contribute to existing knowledge. The proposal should include an extensive review of the relevant literature, and a detailed outline of the proposed research demonstrating an understanding of the technical and theoretical aspects of the experimental protocols. The student will be required to defend this proposal before the thesis advisory committee and, if indicated, the Graduate Advisory Committee. This document is considered a blueprint for a suitable thesis project at the time it is prepared and accepted. Changes in project or strategy during the student's thesis research may be made with the approval of the advisor and the thesis advisory committee.

- Successful completion of course work identified in the student's academic program, and adequate performance in an oral and/or written preliminary examination administered by the Graduate Advisory Committee.

Thesis

Following admission to candidacy the students shall devote themselves full time to research activities under the guidance of the principal advisor and thesis advisory committee, and shall be actively involved in all the scholarly pursuits of the Department of Immunology/Microbiology, including tutorials, seminars and journal clubs. Students are expected to seek opportunities to gain experience in teaching and, where possible, to be maximally involved in the teaching activities of the faculty to the extent that this does not interfere with the progress of the research program.

Following at least four quarters of research activity and agreement by the student and the thesis advisory committee that research progress is such that a dissertation may be prepared and presented, the Graduate Advisory Committee shall be notified. At least three months prior to the expected date of completion, a timetable will be set by the Graduate Advisory Committee providing a deadline for submission of the thesis and times for presentation and defense of thesis. Additional examinations also may be required and a timetable will be established for these.

A thesis examination committee will be appointed for each candidate by the Graduate Advisory Committee with the approval of The Graduate College Executive Committee and

the dean. The committee shall be composed of the thesis advisory committee of the student and any additional members of the faculty of The Graduate College deemed appropriate. In addition to their evaluation of the thesis, the examining committee, through consultation with the Graduate Advisory Committee, may request evaluation of the written dissertation by at least one scientist (external examiner) of international stature in the field of investigation who is not affiliated with Rush University.

Recommendation to the University for the award of the degree of doctor of philosophy is made on the basis of scholarly achievement and research ability. The role of the thesis examination committee is to evaluate the student based on the following:

- Presentation and general defense of the scientific basis of the dissertation in an open lecture.
- Reports of any external examiner(s) concerning the standard of scholarly research presented in the dissertation.
- An oral defense of thesis before the examining committee and approval of the written thesis.

The thesis examination committee may request additional examination of the student or evaluation of the dissertation and submit its recommendations to the Graduate Advisory Committee, which, upon agreement that the student has satisfactorily met the requirements for the award of the degree, communicates its recommendations to The Graduate College.

If within ten quarters following entrance into candidacy the student has not submitted a dissertation or the thesis advisory committee has failed to notify an intent to submit a dissertation, the Graduate Advisory Committee may assume the role of thesis advisory committee to evaluate the progress of the student and suggest modifications that would enable candidacy requirements to be completed within one calendar year. It is expected that students will complete the program in less than the seven-year period specified by The Graduate College. Requests to the program director and Executive Committee for extension of enrollment beyond this period will be considered only under exceptional circumstances.

Research Activities

Areas of current interest in which research training is offered include the immunobiology of the inflammatory response; the biology of the complement system, including mechanisms of activation, the control of the complement attack mechanisms and the pathophysiology of

complement deficiencies; pathogenesis and immunobiology of amyloid; immunopharmacology, cellular immunology, particularly cell-mediated mechanisms in inflammation; mechanisms underlying the allergic response; immune interactions of cells and membranes; the immunopathology of coagulation; and the structure and function of the C-reactive proteins and other molecules associated with the acute inflammatory response. The application of basic research to questions of human health and disease is a general commitment of the faculty of this program.

The current annotated departmental research report is available on request.

Service and Clinical Activities

In addition to offering the graduate program and conducting active research programs, the department teaches immunology to medical students, offers an allergy/immunology residency program, and maintains a close affiliation with the hospital's clinical immunology laboratory.

Division of Pharmacology Philosophy

The Division of Pharmacology offers study and research programs leading to the degree of doctor of philosophy. The division is composed of faculty members active in basic medical research, pharmaceutical sciences and clinical investigation. Such diversity of interest allows this division to design doctoral programs that satisfy the needs of students interested in most aspects of pharmacology. A program of study has also been created for students who wish to enroll concurrently in this division and in Rush Medical College.

The goal of the division is to provide excellent training in research and teaching. Each student has the opportunity to participate in research of the most basic chemical nature and in research aimed at solving disease problems. Emphasis is also placed on the development of drug analysis methods, for research and as a practical laboratory problem in a service setting, especially as related to drug trials and other areas of clinical investigation. Teaching exposure is encouraged throughout the entire training period.

Admission Requirements

In addition to the basic requirements established by The Graduate College, the Division of Pharmacology has the following requirements for admission to its program. The academic experience of the student will usually include an undergraduate grade point average of 3.0 overall (A=4.0), with a 3.5 average in science courses. Recommended courses include calculus, college physics, organic chemistry, and physical chemistry. Students with deficiencies in basic course work can be admitted to the program. However, for any such applicant, the division will retain the right to require extra course work that will then be considered a prerequisite for admission to candidacy for the Ph.D. degree.

The Graduate Record Examination is not required by the division although it is highly recommended that applicants take the verbal, the quantitative, the analytical and the appropriate advanced tests.

Applications for admission will be accepted by the division for all quarters of the year. Incoming students with no graduate training should consider applying only for the fall quarter due to the scheduling of the basic required course sequence. When applications are received before February 15, a decision will be sent to the applicant before April 15. Later applications for the fall quarter may be accepted if space is available. Students with research experience can begin graduate studies during any quarter of the year, and such applicants should expect to continue their research or begin an active research program within the division at the time of their admission. In either case, early application is recommended because of the small number of places available.

Applications will be evaluated by the pharmacology division director and by the division admissions committee. The admissions committee will base its recommendation regarding admission of the applicant on several factors. All prior academic experience and the letters of recommendation will be evaluated for an indication of the applicant's potential for success in graduate studies. A statement by

the applicant describing his/her own goals and motivation will be studied to determine the compatibility between the applicant's goals and the capabilities of the graduate program. With rare exceptions, all applicants will be required to appear for an interview with faculty members in the Division of Pharmacology before admission to the program. A recommendation from the division regarding the applicant's admission will be presented to the dean and The Graduate College Executive Committee for final approval.

Curriculum

This program is based on a study and research schedule that should be completed within three to six years of full-time study. During the first year the student is usually committed to completing required course work and deficiencies, if any. Elective courses in other divisions will be available throughout the program. During the second and later years, required courses are completed and the student is encouraged to enroll in appropriate courses within this and other divisions of The Graduate College. Research ordinarily begins during the first year and continues as the primary activity throughout the second and later years.

Required Courses. The required courses for all graduate students in pharmacology are biochemistry, medical physiology, biostatistics, medical pharmacology, advanced pharmacology pharmacokinetics, laboratory instrumentation, experimental models in pharmacology, and seminar. The specific course numbers are:

Curriculum: Pharmacology

Year I							
Fall		Winter		Spring		Summer	
BCH 471	4	BCH 472	6	BCH 473	2	PHR 598	9
PHY 451	5	PHY 452	5	PHR 521	3	Elective	3
PVM 541	3	PVM 542	3	PHR 622	4		
PHR 591	2	PHR 591	2	PHR 591	2		
PHR 691	1	PHR 691	1	PHR 691	1		
Total Credits	15		17		12		12
Year II							
Fall		Winter		Spring		Summer	
PHR 501	4	PHR 502	4	PHR 503	2	PHR 598	9
PHR 591	2	PHR 591	2	PHR 591	2	Elective	3
PHR 598	5	PHR 551	3	PHR 598	7		
PHR 691	1	PHR 598	2	PHR 691	1		
		PHR 691	1				
Total Credits	12		12		12		12

For students who have already taken these courses elsewhere, the recommendation of the present course director or evidence of satisfactory performance in the course may allow the division to consider the requirement satisfied.

Concurrent M.D./Ph.D. Program

The graduate program in pharmacology will be offered in the form described on page 94 to the student who has been admitted to both the graduate program in the Division of Pharmacology, and to Rush Medical College and who elects to begin both programs of study in the same year. During the first two years, the student will complete the required courses in the pharmacology graduate program as well as the regular medical college curriculum for that period of time.

The student will then interrupt Rush Medical College enrollment and concentrate full time on graduate studies in the Division of Pharmacology. When the graduate work is complete the student will continue with the clerkship program in the medical college.

The student will be strongly encouraged to begin a research program during the summer before course work begins. Research can be included in the curriculum at any time.

After the second year, the student will begin full-time enrollment in The Graduate College, and the clerkship program in Rush Medical College will be delayed until the graduate work is complete. During this time, the student will

complete the required course work, enroll in advanced or elective courses, pass the comprehensive qualifying examination, present and defend a suitable dissertation protocol, complete dissertation research and present and defend an acceptable dissertation. The Ph.D. degree will be awarded by Rush University upon the successful completion of this training program. The student will then continue with the clinical curriculum of Rush Medical College.

Students who are admitted to the Division of Pharmacology graduate program and to Rush Medical College but who do not begin these study programs at the same time may also benefit from this combined curriculum. An individual study program which includes available aspects of this curriculum can be designed for such students.

Students who enter this program are subject to the full conditions and requirements of both colleges.

Academic Policies

(Additional policies are listed in The Graduate College and in the Academic Information sections.)

Academic Progression

Academic Advisor, Major Advisor. The graduate division director functions as the academic advisor to the student during the first year. The director, during this time, determines the course schedule with the student and monitors the student's progress. Beginning in the first year, the student is expected to gain

Curriculum: M.D./Ph.D.**Year I****Summer**

Graduate College
Research 12

Fall

Medical College
Human Anatomy

Graduate College
*Advanced Pharmacology 2

*Physiology 5

*Biochemistry 5

Behavioral Sciences 3

*Biostatistics 3

*Seminar 1

Total Credits 12

Total Credits 16

Winter

Medical College
Human Anatomy

Graduate College
*Advanced Pharmacology 2

*Physiology 5

*Biochemistry 5

Behavioral Sciences 3

*Biostatistics 3

*Seminar 1

Spring

Medical College
Microbiology

Graduate College
Neurobiology

*Advanced Pharmacology 2

*Biochemistry 3

Behavioral Sciences 3

*Instrumentation 3

Preventive Med. 1

*Seminar 1

Total Credits 16

Total Credits 9

*Required Course, Division of Pharmacology

Year II**Summer**

Graduate College
Research 5

Laboratory Models 4

Elective 3

Fall

Medical College
Pathology

Graduate College
Immunology

*Pharmacology 4

Genetics

*Advanced Pharmacology 2

Behavioral Sciences

*Seminar 1

Total Credits 12

Total Credits 7

Winter

Medical College
Pathology

Graduate College
Clinical Patho-physiology 2

O&C/Clinical tutorial 3

*Pharmacology 4

*Advanced Pharmacokinetics 3

*Seminar 1

Spring

Medical College
Pathology

Graduate College
Clinical Patho-physiology 2

O&C/Clinical tutorial 2

*Pharmacology 2

*Advanced Pharmacology 2

*Seminar 1

Total Credits 10

Total Credits 5

*Required Course, Division of Pharmacology

Year III**Summer**

Part I of National Board of Medical Examiners
Comprehensive Qualifying Examination

laboratory experience. This activity is intended to lead to the definition of research interests and to the selection of a major advisor. The major advisor, a faculty member in the Division of Pharmacology, then accepts the supervisory role in the development of the student as a scientific investigator.

Advisory Committee. After a major advisor is chosen, this person and the student assemble an advisory committee. The committee consists of five graduate college faculty members, no more than four to be from the Division of Pharmacology, including the major advisor who serves as chairperson. This committee is responsible for adapting continued course work to the student's needs and for providing advice and evaluation at all points in the graduate education experience. Specifically, the committee evaluates the dissertation protocol, the dissertation, and performance at the dissertation defense.

Comprehensive Qualifying Examination. Toward the end of the second year the student usually is expected to take the comprehensive qualifying examination. This examination can only be given with the recommendation of the division director after elimination of all deficiencies and completion of all required courses. The examination is designed to test general knowledge in pharmacology and it is administered by the Division of Pharmacology faculty. The level of performance on this examination determines if the student is admitted to candidacy for the Ph.D. degree. Students who are unsuccessful in gaining admission to candidacy for the Ph.D. degree may retest one time only, 6 to 12 months after the original examination date.

Dissertation Research. Before the specific dissertation research is begun, a detailed dissertation protocol, including a literature review, must be presented to the Advisory Committee. At this time the student is required to defend orally the research proposal by demonstrating an understanding of its goals and of the methods used to achieve those goals. When the committee is satisfied that these qualifications have been met, it recommends that the student begin the research project. Although the research is closely supervised by the major advisor, the student is expected to accept the responsibility for attainment of the research goals.

Once the research is complete, the student presents a reading copy of the dissertation to the Advisory Committee for its evaluation and

comments. The committee is responsible for offering suggestions to the student on how the work may best be presented in a dissertation. Following this advice, the student completes the dissertation and makes a formal presentation of it to the Advisory Committee as the dissertation defense.

The awarding of the Ph.D. degree requires the demonstration of a capability for independent research and a contribution to scientific knowledge as judged by the Advisory Committee, the division faculty, the dean, and the Executive Committee.

Research Activities

Research experience is being offered in the following general areas: drug effects on cellular metabolism, drug metabolism, pharmacogenetics, cardiovascular pharmacology, biochemical pharmacology, neuropharmacology, and clinical pharmacology. Current research projects that may be available to graduate students in the Division of Pharmacology include: mechanism of action of various redox drugs as investigated by studies of red cell metabolism; hereditary and acquired disorders of the pentose phosphate pathway, glycolysis, and hemoglobin; animal models of tardive dyskinesias; parkinsonism and related disorders; slow acetylation as related to drug effects and disease such as lupus erythematosus; clinical drug testing (Phase I and II); analgesic properties of cholinergic drugs in relation to the morphine receptor theory; pharmacology of primaquine and mefloquine; clinical pharmacology of methotrexate; prostaglandin metabolism in endotoxin shock; pharmacology of platelet activating factor; and clinical pharmacology of new antibiotics and new drug assays.

Service and Clinical Activities

The graduate division includes faculty members who are involved in service and clinical research activities. The service laboratory designs and performs selected drug assays on patient samples for clinical cases where the monitoring of drug levels is necessary for effective therapeutics or to avoid toxicity. The Clinical Pharmacology Unit tests new drugs for toxicity and for effectiveness in human subjects. All students are encouraged to participate in these activities even though their major area of interest may lie elsewhere.

Division of Physiology

Philosophy

The program of the graduate Division of Physiology provides state of the art training in the most quantitatively oriented areas of modern physiology and biophysics. To this end a limited number of students are invited to join particular research laboratories as predoctoral fellows, and most of the training occurs in this setting. The sole goal of the faculty is excellence in research and it expects to develop a nucleus of students who will become future leaders in the field.

Admission Requirements

Students who desire to specialize in this program are strongly advised to obtain a broad scientific foundation, including work in the related sciences. Courses in some or all of the following fields are suggested for attainment of this objective: physics, including electronics; chemistry, including physical chemistry; mathematics, including differential equations; molecular and cell biology or cell physiology.

An applicant who holds a degree from an accredited institution will be considered for admission on the basis of the following criteria:

- An undergraduate record of superior quality demonstrating proficiency in quantitative science.
- A well organized plan for graduate study and research compatible with expertise in the division.
- Recommendations from at least three college faculty members acquainted with the character of the applicant.
- Ability to function in a program stressing an independent approach to the acquisition of knowledge.

• Other materials required by the division director. The Graduate Record Examination (GRE) is recommended but is not required.

Except in unusual cases, the minimum prerequisites for admission will be the attainment by the applicant of a 3.0 overall average ($A=4.0$) in undergraduate studies with a 3.5 average in science courses preferably including two years of physics or engineering, inorganic and organic chemistry, physical chemistry, advanced calculus, ordinary differential equations, cell biology or cell physiology.

Applicants for admission to the division will be initially evaluated by the division director and Advisory Committee. Considerations will

include overall academic record, evidence of previous ability to pursue successfully independent studies, recommendations of the applicant's undergraduate faculty, and the description of the applicant's scientific research interests. The division director also will determine whether additional supporting evidence would aid evaluation of the application and, if so, make appropriate arrangements with the applicant to submit such evidence.

Applications judged by the division director to demonstrate satisfactory credentials and interests compatible with the research facilities of the faculty will then be evaluated by all faculty members with expertise in the area(s) of interest of the applicant. Considerations in this phase will include not only academic ability but also the resources available to support research in the indicated area. An interview may be requested. Selection of applicants will be by invitation of a faculty member in the division willing and able to serve as the student's principal advisor and research sponsor after endorsement of the selection by the division director, Executive Committee of The Graduate College and the dean. In special circumstances, exceptions to this procedure may be made for students with unusual promise but with no firm commitment to a particular area of research. In such case, the program director will serve as interim principal advisor. Finally, in the case that the division director would be the principal advisor of a student, the physiology department chairperson shall assume the duties of division director with respect to that student.

Curriculum

All students admitted to the division will be required to enroll in the medical physiology course as soon as possible after admission. The course will be supplemented in certain areas by an extensive outside reading list and/or special tutorial study with the faculty. In addition, each incoming student will also be expected in the first two years to enroll in at least seven courses, each involving tutorial study with one or more members of the faculty.

The student and his/her principal advisor (in consultation with the division director) will choose courses based in part on the student's previous formal training in subjects deemed essential to work in his/her area of interest. Most students will be required to select a minimum of seven courses from among those

described in the course offerings of the Division of Physiology, but this requirement may be increased at the discretion of the principal advisor and division director.

It is anticipated that courses deemed essential to the student's graduate training by the division occasionally will not be available in the Division of Physiology or other divisions of The Graduate College. In this case, arrangements will be made for the student to enroll in such courses at other institutions and performance in these courses will be required to be at the same level as for courses at Rush. In certain circumstances, a program of supervised independent study may be recommended as an alternative to particular course work.

The complete course plan, outlining all courses to be taken at Rush or elsewhere, will be prepared and signed by both the student and the division director before the end of the first quarter of residence.

Each student shall be required to pass a comprehensive preliminary examination which will insure a minimal necessary level of familiarity with modern physiological research. This examination will be arranged by the student and division director no later than 18 months after admission to the division.

Exceptions to the foregoing course requirements may be made by the division director in some instances for students entering the program with a postbaccalaureate degree and/or evidence of previous successful completion at other institutions of courses judged to be comparable to divisional required courses. Individual course requirements may be exempted on the basis of a past academic record by the successful completion of a special examination covering the content of the required course or in unusual circumstances by the successful completion of the preliminary examination itself. Such exemptions will not be made automatically solely on the basis of a past academic history but will be carefully judged on an individual basis by the division director and Advisory Committee. Recommendations for exceptions made by the division director must have the approval of the dean.

Course Offerings

The following courses will be available, subject to demand and limitation, to graduate students within The Graduate College.

PHY 451 *Physiology I*

PHY 452 *Physiology II*

PHY 502 *Introductory Membrane*

Biophysics

PHY 503 *Physiology of Striated Muscle*

PHY 504 *Neurophysiology*

PHY 513 *Cardiovascular Physiology*

PHY 514 *Functional Neurophysiology*

PHY 523 *Circuit Theory and Practical Design*

PHY 524 *Linear Differential Equations and Transform Methods*

PHY 525 *Linear Systems Analysis*

PHY 531/532 *Physiological Modeling*

PHY 555 *Physiology of Cellular Homeostasis*

PHY 590 *Special Topics in Physiology*

PHY 598 *Introduction to Research*

PHY 640 *Applied Electrophysiology*

PHY 641 *Molecular Mechanisms in Control of Ion Permeability*

PHY 651 *Advanced Topics in Muscle Physiology*

PHY 653 *Problems in Synaptic Physiology*

PHY 655 *Sensory Neurophysiology*

PHY 656 *Neural Correlates of Behavior*

PHY 690 *Research Topics in Physiology*

PHY 699 *Thesis Research*

Academic Policies

(Additional policies are listed in The Graduate College and in the Academic Information sections.)

Thesis Proposal

Upon admission to the division, the student and his/her principal advisor shall begin to make preparations for a proposal upon which the student's original research project will be based. Such preparations will include intensive study of the literature in the student's field of interest, instruction in the basic laboratory skills necessary for professional development in the field, and any other requirements established by the principal advisor and division director, in addition to the course requirements discussed above.

No later than 18 months after admission, the candidate shall present to his/her thesis committee an original proposal for contribution to knowledge in his/her area of specialization. It shall include an extensive review of the relevant scientific literature, a description of the technical aspects of the proposed studies, an outline of the anticipated experimental approach to the major problem of interest, and a discussion of possible results and their interpretation. The student will be expected to defend both his/her proposal and general ability to achieve professional competence before this committee.

The thesis committee shall have at least three members: the principal advisor; the division

director; and, whenever possible, an individual outside the institution with national stature in the candidate's field of interest selected jointly by the candidate, principal advisor, and division director. In addition to evaluating the content of the thesis proposal, the outside member shall have a responsibility to maintain close and frequent contact with the student and principal advisor and to advise the division director concerning the progress of the academic program. Ordinarily, the thesis committee shall be constituted as soon as possible after admission of a student to the division.

The thesis proposal may be submitted to the faculty prior to completion of course requirements or the preliminary examination in order to enable research activity to begin, but the student will not be formally admitted to candidacy until these are satisfactorily completed.

Candidacy

Upon successful completion of the preliminary examination and acceptance of the thesis proposal, the student shall be admitted to candidacy for the Ph.D. and shall be expected to devote fully his/her energies to the program. A minimum residency requirement of one calendar year following admission to candidacy must be met by all students unless special exceptions are granted by the division director and dean. The principal advisor shall make frequent reports to the division director concerning the student's progress, and should either faculty member or the candidate feel it appropriate, the thesis committee can be called into session to judge the student's continued participation in the graduate program or to determine possible alterations in the area of his/her research efforts. In addition, the student and principal advisor will be expected to consult periodically with the other committee members who may also request the division director to call formal meetings of the thesis committee.

Conflicts between the student and/or any members of the thesis committee not resolvable by the full committee may be referred to the Advisory Committee of the division or higher authority as specified in the policies and procedures of The Graduate College.

The degree of doctor of philosophy is given in recognition of high attainment and ability in a particular field of scientific research as evidenced by submission of a dissertation showing power of independent investigation and forming an actual contribution to existing knowledge. Such dissertation will be submitted to the candidate's thesis committee

for review and defended orally at least three months before the degree is granted. The thesis committee will ordinarily request an evaluation of the candidate's dissertation by a scientist of national stature not affiliated with Rush University.

Acceptance of the dissertation by the thesis committee will be reviewed by the Executive Committee and the dean, along with the candidate's entire academic performance in The Graduate College. Determination of completion of all requirements will result in the dean's recommendation that the degree be awarded at the next scheduled commencement exercises of Rush University.

Should the candidate not have submitted a dissertation three years after admission to candidacy, the thesis committee shall be convened to evaluate the candidate's progress, and if proper, to suggest alteration in the program.

Research Activities

Members of the division carry out research in three overlapping areas: transport and electrical properties of membranes and complex tissues; motor and sensory processing in the mammalian nervous system; and circulatory phenomena.

Membrane Properties. Both the transport and the excitability properties of membranes are studied.

The properties of the digitalis-receptor of the heart, a component of the $\text{Na} + \text{K}$ pump of the cardiac muscle membrane, are also studied. One project is focused on the physiological regulation of this system by hormones. Specifically, changes in cardiac performance that accompany altered thyroid function have been shown to result from altered synthesis of $(\text{Na} + \text{K})\text{ATPase}$ in the cardiac muscle membrane. In a related study the autonomic nervous system was shown to regulate $(\text{Na} + \text{K})\text{ATPase}$ via modulation of cyclic nucleotides. Finally, a technique for the automatic, continuous assay of $(\text{Na} + \text{K})\text{ATPase}$ is being developed.

The basic ionic mechanism underlying the action potential is being studied in voltage-clamped giant axons. Previous investigations have shown that when examined in sufficient detail, the kinetics of sodium activation and inactivation show striking departures from the behavior expected for a system consisting of noninteracting, voltage-sensitive gates such as those implicit in the classical Hodgkin-Huxley formulation. Presently, both traditional voltage-

clamp and internal perfusion techniques, and new procedures for noise analysis and measurements of intramembrane charge movements are being used to further elucidate the molecular details of the sodium and potassium channels.

Problems in synaptic physiology are divided into two classes: the method by which transmitters are released from the presynaptic element, and the nature of the biophysical interaction with the postsynaptic receptor giving rise to changes in membrane permeability. Both questions are being actively investigated.

Nerve cell bodies exhibit a complexity of behavior not usually seen in the axons they support and often contain quite unique sorts of ionic channels. In order to understand such behavior, neurons from simple invertebrate nervous systems are being quantitatively examined using voltage-clamp techniques in much the same way as such procedures have been applied to the problems of nerve excitation.

Skeletal muscle fibers have a structure considerably more complex than nerve axons, including invaginations of the surface membrane that form a tubular system running almost transversely across the fiber. The structural and electrical properties of skeletal muscle fibers are being studied in some detail, and a detailed model of the electrical properties expected from the branching tubular system is being constructed by measuring such properties using methods of linear electrical circuit theory. Techniques include both sinusoidal and stochastic analysis. The theory and measurements are being extended to try to predict the shape and conduction velocity of the propagating action potential, the natural electrical signal that initiates contraction. Attention is also being paid to the mechanism by which the action potential occurring across the membranes of the tubular system initiates contraction.

Artificial bilayer membranes may be constructed from a mixture of a surfactant and an alkane and various transport molecules added to produce effects similar to those seen in living tissues. The physical basis of membrane transport can then be studied in a simple system of defined composition and compared with natural phenomena.

Information Processing in the Central Nervous System. The processing of visual information by the mammalian nervous system is being studied in both human and experimental human preparations. The laterality of information processing in female subjects with Turner's syndrome is being investigated through the

recording of visually evoked responses in the electroencephalogram. In animal models visual processing is being studied with microelectrode techniques (extracellular action potentials and evoked population responses); of particular interest here is the effect on the visual system of such homeostatic imbalances as hyperthermia and hypoxic hypoxia.

The control of motor behavior by the nervous system is also being studied in normal human subjects. Responses to different kinds of stimulus-induced errors introduced into the performance of various motor actions are being monitored. The latencies of these responses will provide information as to the CNS level at which they are generated, and their amplitudes will provide a measure of the general level of excitability at different segmental levels. By studying different types of motor actions and using different stimuli, singly and in combinations, it will be possible to uncover information about the motor mechanisms responsible for the coordination of voluntary and involuntary (reflex) behavior.

Epileptic seizures can be induced in animals by a variety of techniques. Such animal models are being used to investigate the basic mechanisms underlying this behavior and the ways in which seizures may be prevented from developing or controlled. In addition, basic mechanisms of information processing in the mammalian visual and association cortex are being investigated with the aim of elucidating cellular correlates of learning. Invertebrates such as snails and crayfish have nervous systems in which individual cell bodies are large and easily identified from one animal to another. Electrodes may then be inserted into such cells and recordings made while the animal is exhibiting a particular response to learn more concerning the neural basis of complex behavior patterns.

Circulatory Phenomena. Three separate projects are under way in this area. The effects of pulsation on blood flow in the laminar transition region are being studied. The pulse has been found to cause an early transition to turbulent flow, an effect that is strongly dependent on pulse amplitude but only slightly affected by pulse frequency. Furthermore, the effect is inversely related to tube length, being unimportant in tubes having the same geometry as actual blood vessels. These results indicate the importance of vessel geometry in protecting the circulation against excessive energy losses from turbulence. A second project in this area involves a study of the microcir-

ulation of skeletal muscle. Of particular interest here is the distribution of flow and the transport of materials that occurs during exercise.

Finally, the responses of the cerebral vasculature to conditions of hypoxic hypoxia are being investigated. Local blood flow, tissue oxygen levels, and neural function (visual evoked responses) are being monitored in an attempt to determine the mechanism(s) responsible for the high sensitivity of the cerebral cortex to oxygen lack. Also of interest are the occurrence and mechanism of oscillations in tissue oxygen tension recorded in some parts of the brain.

Division of Psychology

Philosophy

The Division of Psychology offers a program of study leading to a doctor of philosophy degree in psychology with specialization in health psychology. Within the scientist-practitioner model, the goal of the program is to integrate basic knowledge of human behavior across the life span with specialized understanding of psychological issues in health and illness. Students who enter the program will pursue a research program that provides a contribution to the understanding of behavior. They may also elect training in the clinical skills which will prepare them to perform as professionals in health psychology.

Specific objectives of the program are:

- To provide a foundation in the basic theory and empirical findings of psychology with special emphasis on psychological processes as they relate to the prevention, diagnosis, treatment, and management of physical disease.
- To train psychologists as scientific investigators with the research skills to study behavior as it relates to effective health care.
- To prepare professionals with the knowledge and skills to address the psychological and emotional needs of medical patients.

Admission Requirements

In addition to the admission requirements established by The Graduate College, the division requires the results of the Graduate Record Examination (GRE) aptitude test and the advanced test in psychology. Foreign students whose native language is not English must demonstrate proficiency in English by

submitting results of the Test of English as a Foreign Language (TOEFL). A personal interview may be requested. Completed applications should be submitted to The Graduate College by February 15.

Admission to the program is limited and competitive with students admitted only once each year in the fall term. Students from varied backgrounds whose career commitment is to health psychology are encouraged to apply. Although a background in psychology and the biological sciences is desirable, there are no specific requirements for admission regarding undergraduate preparation. Students who have graduate training may apply and, if admitted, their class standing will be determined on an individual basis.

Applicants will be evaluated on the basis of their academic record, letters of recommendation, their personal statement of career goals and aspirations, and their GRE scores. It is the responsibility of the Graduate Committee to review all applications and recommend acceptable candidates. The authority for admission to the program rests with the entire faculty of the graduate Division of Psychology, the Executive Committee of The Graduate College, and with the dean.

Curriculum

The curriculum is designed to provide a foundation in the science of psychology while permitting students the flexibility to pursue individual interests in health psychology. Completion of a core program in the basic theory and methods of psychology is required with a concentration in biological psychology and normative behavior across the life span. Depending upon their area of interest, students pursue advanced study and research leading to a dissertation in a specialized area in health psychology. There is provision for elective courses throughout the graduate experience to permit diversity in individual programs and to provide the opportunity for involvement in research throughout graduate training. Study in the biological sciences and other cognate areas relevant to the student's program is encouraged.

Additional requirements for those students who elect clinical training include a clinical core course sequence and supervised practicum experiences. Required practicum experiences include training in psychological assessment and intervention skills, and a specialty practicum in the evaluation and management of

behavioral problems as they occur in medical populations. Areas of clinical specialization offered are as follows:

- Health Psychology
- Pediatric Psychology
- Neuropsychology
- Sleep Disorders

Course Requirements for all students include the following:

- *General Psychology Core*
PSC 501 Psychology of Learning
PSC 521 Biological Bases of Behavior
PSC 522 Psychophysiology
PSC 531 Developmental Psychology I:
 Infancy through Adolescence
PSC 532 Developmental Psychology II:
 Adulthood and Aging
PSC 541 Theories in Social Psychology
PSC 545 Health and Illness Behavior
PSC 557 Human Neuropsychology
- *Statistics*
PSC 505 Biostatistics I
PSC 506 Biostatistics II
PSC 507 Biostatistics III

Additional requirements for clinical students include:

- *Clinical Psychology Core*
PSC 551 Theories of Personality
PSC 553 Psychopathology
PSC 571 Principles of Psychotherapy
PSC 572 Principles of Behavior Change
PSC 575 Assessment of Intelligence
PSC 576 Assessment of Personality
PSC 605 Professional Issues
PSC 621 Clinical Health Psychology
- *Clinical Practicum*
PSC 611, 612, 613 Practicum in Assessment and Intervention Skills I, II, III
PSC 616, 617 Practicum in General Clinical Psychology I, II
PSC 629, 639, 649, or 659 Practicum in health psychology specialty

Academic Policies

(Additional policies are listed in The Graduate College and in the Academic Information sections.)

The doctoral degree program in psychology requires a minimum of 144 hours beyond the bachelor's degree, equivalent to four years of full-time academic preparation. Three years of academic preparation must be completed in residency. Registration for three quarters at a minimum of 12 credit hours each quarter constitutes one residency year. For those

students who elect clinical training, one additional calendar year of clinical internship training is required.

Assessment of Progress. The graduate program director, in consultation with the Graduate Committee of the division, functions as an academic advisor to the student, planning the course schedule and monitoring progress in yearly conferences. Data for assessment of student progress include written evaluation of work by faculty research and clinical supervisors as well as academic records. When a student has defined an area of research concentration, an appropriate major advisor will be identified within the Division of Psychology. It is the role of the major advisor to guide the student in dissertation research and to serve as chairperson of the dissertation committee.

Comprehensive Examination. A written examination designed to assess the student's knowledge of general theory and methods of psychology and the student's area of specialization will be taken after the first two years of satisfactory work is completed.

Dissertation. Following successful completion of the comprehensive examination, the student will begin work on a dissertation, according to the following agenda.

- Selection of a dissertation committee in consultation with the major advisor.
- Development of an acceptable research dissertation proposal.
- Oral preliminary examination in reference to the rationale, methods, and goals of the dissertation proposal.
- Admission to candidacy for the doctoral degree, contingent upon approval of the proposal by the student's dissertation committee.
- Completion of dissertation research.
- Oral defense of the dissertation.

Service and Clinical Activities

Practicum experiences of many kinds are available within the hospitals and programs of the Medical Center. Most faculty of the graduate division have clinical responsibilities in the Department of Psychology and Social Sciences. The department is currently providing clinical service in numerous areas: psychodiagnostic services; general clinical health psychology consultation; neuropsychology consultation; consultation to the Rush Cancer Center, the Johnston R. Bowman Health Center for the Elderly, and the cardiology service; clinical sleep disorders evaluation and management; and programs in chronic headaches, obesity and low back pain. Programs

provided through other departments include pediatric psychology, outpatient treatment of emotionally disturbed children, student counseling, counseling with chronic neurologic patients, and evaluation of legal offenders. In addition, the department offers a clinical internship program for the training of clinical psychology doctoral candidates from other universities in the areas of pediatric psychology, health psychology, and neuropsychology.

Research Activities

Faculty research interests cover numerous areas within health psychology, including infancy and aging, social and behavioral aspects of chronic disease, brain-behavior relationships,

and health services delivery. Current projects include: studies in chronic pain syndromes and stress management, neural substrates of learning and memory, memory disorders, psychological disturbance in neurological disease, the effect of life stress on sleep and dreaming, management of sleep disorders, psychological aspects of normal and pathological aging, substance abuse and EtOH rehabilitation, psychophysiological assessment of high risk infants, Sudden Infant Death Syndrome, obesity, social networks and health care behavior, and mental health service delivery in health maintenance organizations.

COURSE DESCRIPTIONS

Explanation of Course Descriptions

Discipline Abbreviations

Courses listed and described in this section are expected to be offered by the faculty of Rush University for the 1983-84 academic year. The courses are listed alphabetically according to the *discipline* to which the course content is most closely related. These disciplines do not necessarily reflect a *department* in the University or in the Medical Center. A three-character abbreviation for the discipline precedes the course number for each course listed.

Course Numbers

A three-digit course number follows the course abbreviation. It indicates the level of offering for that course as shown below:

Course Numbers	Level of Offering
300-399	Undergraduate Third Level
400-449	Undergraduate Fourth Level
450-499	Dual Level—may be taken for undergraduate or graduate credit
500-599	Graduate Level
600	Post-Master's Level Residency
601-699	Doctoral Level

Course Content

A course title is followed by a brief description of course content and information pertaining to the course:

Information

Prerequisite required

Quarter in which course is given

Entry

Prerequisite course abbreviation and numbers. If corequisite is listed both courses must be taken during the same term.

FA(II), WI(nte)r, SP(ring), or SU(mmer) if given once a year. Any course not so designated is offered by special arrangement or only as the occasion arises.

Course credit

Parentheses () indicate the number of quarter hours of credit for the course. In many cases a series of three numbers is shown, e.g. (2-3-3). The first number refers to the hours per week of lecture or seminar; the second, to number of hours in laboratory or clinical setting; the third, to quarter hours of credit. If any of these is variable, it is replaced with a "v."

Clock hours [medicine]

Preclinical courses offered for Rush Medical College students include the number of clock hours for a course in brackets []. These may be in addition to credit hours as many courses may be taken by students in several of the colleges.

Clinical weeks [medicine]

Clinical courses for medical students are indicated by the number of weeks students normally take the course. These weeks are shown on the academic record.

Instructor

Specific instructor's name or staff.

Independent Study Courses

Students may enroll in an independent study course in any discipline of the University under the direction of the appropriate faculty member with his/her written permission, and the approval of the program director.

The course number 449 will be used for academic independent study for undergraduates and 599 for independent study for graduate students, with the appropriate discipline prefix.

Anatomy

ANA 451

Histology. The microscopic anatomy of cells, tissues and organ systems of the human body is studied through laboratories, lectures and self-instructional material. Fine structural specializations relating to tissue function are emphasized along with the histological architecture that characterizes each. FA. (3-4-5) [72 hours] Colgan.

ANA 455

Neuroanatomy. The morphological organization of the central nervous system is explored through lectures, preceptorials, laboratory dissection, and microscopic examination of the human brain and spinal cord. Functional and clinical correlations are emphasized. (5-4-6) Kerns.

ANA 462

Introduction to Neurobiology. The development, morphology and functional significance of the human nervous system is presented in lecture and by demonstrations. Fixed human brain preparations and series of neurological slides are used as visual aid materials. Prerequisite: courses in human biology or anatomy and physiology or comparative anatomy. Consent of instructor. FA. (2-2-3) Kerns, Maibenco, Schmidt.

ANA 471

Human Anatomy I. The structure and function of the human body are examined topographically through laboratory dissection, lectures, and preceptorials. Laboratory dissection is conducted regionally, encompassing the thorax, abdomen, pelvis, perineum, head and neck, back, and extremities. Radiological anatomy, living anatomy, and clinical correlations are emphasized.

Embryology. The fundamentals of human development are examined from gametogenesis and fertilization through the formation and differentiation of the germ layers, organogenesis, and morphogenesis of the fetus. Congenital malformations and experimental embryology are introduced where feasible. FA. (5-6-8) [90 hours] Schmidt.

ANA 472

Human Anatomy II. The structure and function of the human body are examined topographically through laboratory dissection, lectures and preceptorials. Embryology is introduced where pertinent. Continuation of ANA 471. WI. (5-6-8) [90 hours] Schmidt.

ANA 511

Comparative Cytology of Tissues. Cellular structure will be studied in relation to the organization of selected tissues. Emphasis includes application of special techniques, and the evolution of contemporary views on structure and function. Prerequisite: ANA 451. SP. (3-0-3) Colgan, Hughes.

ANA 513

Anatomy of the Eye. The histology and embryology of the eye will be reviewed in detail as the basis for discussion of selected topics. These will include:

congenital malformations, physiology, and pharmacology of selected ocular systems; vessels and nerves of the orbit; and regional structure and function. SP, SU. (4-0-4) Hughes.

ANA 521

Experimental Morphogenesis. Development of complex form will be studied in detail by first drawing upon classical examples of experimental methods applied to the analysis of shape change and differentiation in embryos. This will provide a foundation upon which discussion and critique of contemporary histochemical-cytochemical studies and current concepts of positional information and pattern regulation will be based. Urodele appendage regeneration will constitute the principal model for exploring these topics and independent research projects will be encouraged where feasible. Prerequisite: ANA 451. (3-v-4) Dinsmore, Schmidt.

ANA 522

Tissue Repair Mechanisms. The variable ability of mammalian and nonmammalian tissues (e.g., muscle, bone, etc.) to repair and to reconstitute themselves will be the focus of this seminar course. Recent texts and current journal articles describing experimental studies of fundamental mechanisms associated with tissue responses to injury constitute a reference core around which discussions will be developed. A final, research paper on a student-selected topic is required. Prerequisite: ANA 451. (3-0-3) Dinsmore, Schmidt.

ANA 523

Cell Biology of Vertebrate Repair and Regeneration. Analysis of cytoarchitectural concepts of amphibian appendage regeneration correlated with molecular basis of specific tissue responses to trauma examined principally from histochemical-cytochemical data. This, in turn, will be correlated with tissue repair mechanisms common to all vertebrates. Lectures, preceptorials, and laboratory. SP, SU. (3-v-3) Dinsmore, Schmidt.

ANA 524

Morphologic and Physiologic Adaptations in Development, Maturity, Aging, and Injury. Analysis of biologic structure and function during vertebrate growth and development and the response of these factors to aging and trauma. WI, SP. (3-2-4) Maibenco.

ANA 541

Topics in Muscle Biology. A seminar format will be employed for critical examination of papers relating to the biology of muscle in one of two areas: (1) current topics in excitation-contraction coupling, contractility and energetics; or (2) review of the neuromuscular junction followed by examination of experimental systems dealing with the trophic maintenance and the development of muscle fiber types. Contributions of nerve injury to the pathogenesis of muscle disease will be considered. Permission of instructor. FA. (3-0-3) Colgan, Hughes, Kerns.

ANA 560

Topics in Neurobiology. A seminar format will be utilized to review selected topics and original

papers within one of the following units of study: neurogenesis, plasticity, synaptic organization of neural systems, or current methods in neuroanatomy research. SP (4-0-4) Durica, Hughes, Jacobs, Kerns.

ANA 581

Approaches and Methods in Morphologic Research. Study of how sources of information, methods of investigation, and technical procedures are applied to anatomic research. Demonstrations of techniques and student laboratory participation are included. SU. (2-4-4) Staff.

ANA 591

Preceptorials in Anatomy. Laboratory experience is provided in conjunction with related preceptorials on selected topics in the anatomical sciences. Prerequisites: ANA 451, 471-2. SU. (2-4-4) Staff.

ANA 592

Concepts in Morphology. Seminars and tutorials offered by faculty and guests on topics of special interest in the morphological sciences. FA, WI, SP, SU. (v-v-v)

ANA 595

Journal Club. (v-v-v)

ANA 599

Independent Study. Selected topics in anatomical science. (v)

ANA 601

Surgical Anatomy. A laboratory program of regional dissections and demonstrations. The applied, clinical, and surgical aspects of anatomical regions are emphasized. Prerequisites: ANA 471-2 or equivalent. FA, WI, SP, SU. (0-v-v) Doolas, Schmidt.

ANA 602

Advanced Anatomy. A laboratory program of special dissections and demonstrations on selected regions of the body—thorax, abdomen, pelvis and perineum, upper and lower extremities, and the central nervous system (spinal cord and brain). Prerequisites: ANA 451, 471-2, or equivalent. FA, WI, SP, SU. (0-v-v) Schmidt.

ANA 699

Research. Research devoted to the preparation of a thesis in partial fulfillment of the requirements of the degree program. FA, WI, SP, SU. (0-v-v) Staff.

Behavioral Science

BHV 351

Rape Victim Advocacy. Students will identify the theoretical framework for rape intervention and choose interventions for an individual experiencing rape trauma syndrome. There will be discussion of the medical/legal aspects of rape; field experiences, such as attending court for a rape trial; and acting as an advocate for a rape victim. (2-0-2)

BHV 373

Assertiveness Training. Students will develop the ability to express their ideas, feelings, and needs

honestly and directly. By comparing nonassertive, assertive, and aggressive behaviors and their consequences, they will develop an understanding of the elements of assertion. Students will have intensive practice in both assertive and active listening skills. (2-0-2)

BHV 402

Advanced Behavioral Science I. Major behavioral concepts and theories related to communication, teaching-learning, behavioral stress and adaptation, and family systems are studied within the context of the life cycle. Prerequisite: BIO 302. (4-0-4)

BHV 403

Advanced Behavioral Science II. Several behavioral perspectives are studied and then used to analyze selected types of behavior. The impact of sociocultural, interpersonal, physiologic, and intrapsychic influences is explored, and ethics of intervention is considered. Prerequisite: BHV 402. (4-0-4)

BHV 423

An Introduction to Psychodrama and Sociometry. An introduction to a wide variety of techniques that enhance psychosocial assessment skills and promote empathy, social interaction and group building. The techniques are based on concepts drawn from kinesics, sociometry, role theory and psychodrama. The course will be a combination of lecture, demonstration, discussion and skill practice. (2)

BHV 425

Critical Concepts in Growth and Development of Children and Adolescents. The intent of this course is to develop an in-depth understanding of theories of growth and development and the practical application of this information to working with children from birth to 16 years of age. Current research in the area of growth and development will be critiqued by students on an individual and group basis. A seminar/group discussion format will facilitate the sharing of current research on growth and development and will promote the development of critical thinking. Graduate students enroll in BHV 525. (3-0-3)

BHV 451

Fundamentals of Behavior. During the first five weeks, a series of lectures provides the basic conceptual framework and terminology used to describe and explain human behavior. It is divided into three sections: biological, psychological, and sociocultural. Primary emphasis throughout is on the ways such types of influences affect the lives of patients. During the second five weeks, a matrix of special topic seminars (BHV 473) is presented from which the student selects two. WI. [21 hours] Zeldow, Counte.

BHV 453

Behavior in the Life Cycle. Introduction to a clinically based study of the individual life cycle. Emphasis is on the provision of a normative account of development from physical, psychological, and sociological perspectives. Lecture, discussion, and,

during the second five weeks of the quarter, a matrix of special topic seminars (BHV 473). Prerequisite: BHV 451; SP: [20 hours] Zeldow.

BHV 463

Theories of Deviance. Exploration of contemporary sociological theories of deviance. Emphasis on interactional and labeling processes as they relate to definitions of deviance, societal reactions and systems of social control. Preference given to graduate students. Prerequisite: one introductory and/or advanced course in sociology. (2-0-2)

BHV 473

Behavioral Science Minicourses. A matrix of special topic seminars which allows a concentrated introduction to a significant area of behavioral study. The following descriptions, presented in 1982-1983, are typical of those presented each year. (1 or 2) [10 or 20 hours]

Alternative Modes of Healing. The course will focus upon approaches to the facilitation of healing as practiced by such treatment modalities as osteopathy, chiropractic, spiritual healing, naprapathic, and reflexology, as well as traditional branches of medicine. Emphasis will be on the treator's view of the patient, etiology of disease, methods of intervention and their side effects, utilization of the patient's own resources, and techniques to enlist the patient's own participation in the healing process. Presentations will be made by representatives of alternative modes of treatment.

Behavioral Change Strategies of Medical Practice. This course will focus on the application of the behavioral model of assessment and intervention to medical problems. Topics will include multiple strategies to increase compliance with medical regimes (e.g., pill taking, weight loss, smoking cessation, etc.). In addition, the utility of techniques such as relaxation therapy, systematic desensitization, biofeedback, cognitive behavior modification, and, more generally, stress management in a medical setting will be examined.

Behavioral Pediatrics. This course will focus on typical behavioral problems of the preschool (ages two through four) and early school age (ages five through eight) child which are seen by pediatricians and family practitioners. It is designed to assist in the understanding and treatment of areas such as enuresis and encopresis, feeding difficulties, discipline, reactions to separations (hospitalization, day care), and school-related difficulties.

Family Assessment. This course provides the student with the knowledge base from which to make family assessments. The family systems approach is introduced and selected readings and videotapes of family interviews are utilized to acquaint the student with the family as an object of study, assessment, and treatment. The role of the family in the assessment and treatment of mental and psychosomatic disorders will also be discussed.

Health Care Delivery Systems: A Critical Appraisal. The course examines in detail the structure of the

American system for delivery of health care; the assumptions built into it; the mechanisms which characterize it; and some of the alternatives which are now emerging in the form of HMOs, group practice, national health insurance, etc. Limited analysis of systems from other societies is included. Contemporary critiques of the system are examined.

Human Sexuality and Health Care. This course will review several aspects of human sexuality including the human sexual response in men and women, gender role development in men and women, taking a sex history in clinical practice, sex and medical illness, and basic aspects of sex therapy in general practice. Through the use of videotapes, films, slides, assigned readings, and discussion, this seminar will attempt to help the prospective physician provide better care to those patients who either present themselves with sexual problems or in whom sexual difficulties are uncovered.

Introduction to Death and Dying. This course is designed to provide students with an introduction to selected major issues which underlie effective psychosocial care of the terminally ill person and his/her family. Videotapes of interviews with terminally ill persons and their families will be utilized as a basis for class discussion of: assessment of central psychodynamics in the patient and family; the role of the care-giver's subjective experience in terminal care; and major theoretical perspectives in the literature in the field. A limited amount of reading will be assigned. The class is limited to 12 students.

Neural Basis of Learning and Memory. Examination of experimental approaches used to study the neural basis of learning and memory. The course will cover neurophysiological, biochemical, pharmacological and behavioral studies, and will range from the detailed analysis of simple behaviors in simple systems to complex learned behaviors in man. Where possible, principles discovered in the laboratory will be applied to the memory disorders encountered in clinical situations. Similarly, observations derived from the study of clinical disorders will be used to indicate their contribution to the understanding of memory mechanisms.

Obesity. This course will cover the epidemiology, genetics, and social psychology of obesity. It will also cover the metabolic effects of obesity, factors influencing appetite regulation, and behavioral, dietary and other approaches to treatment.

Pain. Pain is a common symptom, and its alleviation is often a primary goal of treatment. At the same time, pain is often not obviously related to physical disease processes, and it may be a complication of treatment. This course will discuss concepts of pain, factors affecting its report by patients, and its role in various disorders.

Parenthood and Child Abuse. The purpose of this course is to sensitize the student to some of the basic emotional and practical issues of parenting, and second, to consider the circumstances under which parents come to abuse their children. The

first section of the course will focus on topics such as: (1) emotional preparation for parenthood; (2) the influence of parental attitudes on the emotional life of the child and the development of the family; (3) normal stresses of parenting; and (4) practical issues of parenting related to child management. Within this context, consideration will be given to unique situations encountered by single parents, step-parents, foster parents and grandparents. The second section of the course will be devoted to a discussion of the abusing parent with special attention given to the questions of why some parents abuse their children and how professionals can work with these parents.

Perspectives in Community Mental Health. This course is designed to offer a basic understanding of the professional practitioner's role in community mental health. Emphasis is on: (1) attempts to prevent emotional disorders through social and community interventions aimed at their social determinants; and (2) provision of necessary services to the poor, the alienated, and the politically disenfranchised. Various life cycle related problems will be discussed (e.g., the severely disturbed child, the abused child, adolescent pregnancy, problems of the elderly).

Physician on Stage. A vigorous investigation of distinguished nineteenth and twentieth century plays which feature the doctor as an object of social satire; as representative of science in the conflict of *The Two Cultures* (C.P. Snow); and as individuals in crises, concerned with ethical issues and problems of personal life-style. Lectures, readings, and discussion. Works included are by Fredrick Durrenmatt, Eugene O'Neill, Tennessee Williams, Bernard Pomerance, Henrik Ibsen, and G.B. Shaw.

Psychology and Psychopathology of Aging. This course will focus on the normal and psychopathological processes of aging and the physician's role in the total health care of the elderly patient. Topics for discussion will include: (1) normal psychology of the aging process; (2) interviewing techniques with elderly patients; (3) depression, paranoid syndromes, and organic brain syndromes in elderly patients; (4) psychological and psychopharmacological treatment approaches with elderly patients; and (5) family issues in geriatrics.

Psychology of Young and Middle Adulthood. A theoretical and empirical inquiry into the nature of adult development. Topics include the psychodynamics of vocational choice, stability and change in personality, sex differences in adult development, and criteria of maturity. Theorists to be studied include Kenniston, Erikson, Vaillant, Levinson, and Gilligan.

Psychology, Psychiatry, and the Law. This mini-course examines basic issues confronting mental health and the law. Its intent is to familiarize medical students with some of the complex and controversial issues in the application of psychology and psychiatry to the law as well as the impact of mental health on the legal system. The course will examine

treatment and evaluative issues, the role of attorneys in the mental health system, patients' rights, and professional issues such as court testimony and malpractice.

Psychophysiology of Normal and Abnormal Infants. The close relationship between processes of biological and behavioral development during the first two years is explored in depth. The developing response capabilities and behavioral milestones of normal infants are used to define aberrant psychophysiological processes in high-risk and brain-damaged infants. Effects of premature birth and perinatal anoxia and hypoxia are emphasized in the context of the special problems of parenting sick or behaviorally abnormal infants. The range of deficiencies of high-risk or abnormal infants is contrasted with the behavioral patterns of mentally retarded and learning disabled children.

Sleep: Normal and Abnormal. This course will provide a general introduction to the physiology and psychology of sleep. It will cover both normal sleep and dream patterns and the deviations which occur with various medical and psychiatric problems. It will also cover the diagnosis and treatment of the insomnias, hypersomnias, and abnormal behaviors associated with sleep (i.e., sleepwalking, talking, enuresis, and night terrors).

Sociology of Substance Abuse. This course will focus upon defining concepts that are necessary to an understanding of drug-related problems in American society. Included will be discussions of the nature and extent of drug use, epidemiology of drug use, strategies for intervention and prevention programs. Special emphasis will be placed on the sociological perspective vs. others that are used (i.e., pharmacological, psychological, medical and legal).

Sociology of the Hospital. A variety of topics will be covered in this course, including what organizational variables influence the quality of patient care; what dilemmas arise when one attempts to provide clinical services in a bureaucratic system; how external groups exert social control over hospitals; what the role of the patient and his/her family is in the social structure of the hospital and what changes are occurring (e.g., Patients' Bill of Rights); and how social and organizational factors that relate to illness and patient care can be modified to increase the quality of care provided.

Stress and Illness. The term "stress" takes on a variety of meanings and has a wide range of applications in health care. In this course, the history of research on stress in relation to health and illness is reviewed, and the evolution of the concept of stress to present day theories is traced. Hormonal parameters of stress, physiological indications of and responses to stress, cognitive responses to stress, coping mechanisms, and life event relationships to illness are covered. In addition, the research linking stress to specific diseases and illnesses is discussed, including implications for treatment of the individual patient.

Work and Health. Many people in American society spend much of their adult life working in large-scale organizations. Recently, behavioral researchers have begun to better understand how organizational pressures influence the physical and mental health of employees. The major intents of this course are to: examine the epidemiologic distribution of work-related health problems, show how organizational factors are related to occupational differences, and review current attempts at organizational change aimed at lowering the level of such pressures.

BHV 501

Behavioral Dynamics. Behavioral dynamics may be viewed from a variety of theoretical perspectives. This course has been designed to focus on one perspective using symbolic interaction as the theoretical framework. Course topics include the origin and development of self, life cycle social worlds, the relation of physiological processes and their social meaning, and the social context of illness, health, and health care delivery. During scheduled weekly seminars small groups of students will discuss and share ideas and questions generated by lectures and readings. Particular emphasis will be placed on the application of content to current health care practice. (5-0-4)

BHV 522

Applications of Behavior Therapy. Through active participation in seminars, application in behavior intervention and behavior therapy will be explored. Students will collect and analyze behavior data and design behavior therapy programs. (2)

BHV 523

Crisis Theory/Intervention and Management. Designed to expand the students' knowledge of crisis theory, to increase their sensitivity to appropriate circumstances for application of crisis skills, and to provide them with crisis intervention models applicable for clients in various settings. (2-0-2)

BHV 524

Personality: Theory and Research. An examination of (1) the major traditions in personality theory: psychodynamic, psychometric, behaviorist, and phenomenological; and (2) selected topics in personality research: the question of cross situational consistency, and the influence of personality factors in illness and recovery. (3-0-3) Zeldow.

BHV 525

Critical Concepts in Growth and Development of Children and Adolescents. The intent of this course is to develop an in-depth understanding of theories of growth and development and the practical application of this information to working with children from birth to 16 years of age. Current research in the area of growth and development will be critiqued by students on an individual and group basis. A seminar/group discussion format will facilitate the sharing of current research on growth and development and will promote the development of critical thinking. Graduate students will be expected to demonstrate a high level of independent learning in meeting

program objectives. Undergraduate students enroll in BHV 425. (3-0-3)

BHV 532

Stress Management for Health Professionals. An exploration of the concept of stress with particular emphasis on its relevance for health professionals. Included will be discussion of physiological pathways for psychosomatic interactions, stress management techniques in relation to selected pathophysiologic states, and stress management in the work setting. Seminar activities will include identification of stressors as well as self-practice of neuromuscular relaxation. (2-0-2)

BHV 541

Self-destructive Behavior. An examination of self-destructive behaviors in relation to suicide. The course will provide the student with an awareness of the incidence of suicide within society with special attention given to the needs of different age groups. (2-0-2)

BHV 543

Observation and Communication. Introduction to the interview technique and process—the interview as a tool that facilitates the doctor-patient relationship and produces reliable and valid medical information. Interview theory, determinants of patient behavior, and practice of interview skills are included. Seminars utilize videotapes. Prerequisite: BHV 451. WI. [20 hours] Leavitt.

BHV 551

Rape Victim Advocacy. Through lecture and seminar, the student will identify the theoretical framework for rape intervention and choose interventions for an individual experiencing rape trauma syndrome. There will be discussion of the medical/legal aspects of rape. There will be field experiences such as attending court for a rape trial and acting as an advocate for a rape victim. Students will present a proposal for a community model for the rape victim. (3-0-3)

BHV 561, 562, 563

Small Group Dynamics I, II, III. An experiential approach to the study of small groups. Concentration on stages of group development, group process, self-growth, and conflict resolution. Videotaped group experiences will be used as part of the learning process, both in identifying group process and in self-growth. Permission of instructor. (1) (1) (1)

Biochemistry

BCH 411, 412

Clinical Chemistry I, II. Courses on the analytical and biochemical basis of methods used for chemical analysis of body fluids as related to diagnosis and treatment of disease. Topics discussed include blood sugar, carbohydrate tolerance tests, renal function tests, plasma electrolytes, blood gases, proteins, enzymes, liver function tests, cholesterol, and lipids. Critical evaluation of methods is emphasized. (4-0-4) (4-0-4)

BCH 413

Clinical Chemistry III, IV. These courses cover these tests and topics: chemical hematology, special proteins, vitamins, biogenic amines, elementary toxicology, thyroid function tests, and steroid methods. Principles underlying automated and computer application methods will be discussed. Prerequisites: BCH 411, 412. (3-0-3)

BCH 471

Medical Biochemistry I. The chemistry and metabolism of biologically important compounds, amino acids, and proteins; nucleic acid and protein synthesis; bioenergetics; biochemical function of enzymes; common pathways of metabolism; carbohydrate, lipid amino acid metabolism. Additional topics include: the integration of cellular metabolism; regulation of pH and electrolyte balance; regulation of whole body metabolism; muscle biochemistry; biochemical nutrition; connective tissue biochemistry. FA. (4) Bezkorovainy.

BCH 472

Medical Biochemistry II. Continuation of BCH 471. WI. (6) Bezkorovainy.

BCH 473

Medical Biochemistry III. Continuation of BCH 472. Medical students must pass Biochemistry Subtest of the NBME in order to receive a passing grade. SP. (2)

BCH 501, 502, 503

Fundamental Biochemistry for Graduate Students. Involves BCH 471, 472, 473, plus two additional weekly seminar-type sessions to discuss additional reading assignments. 501 FA (5), 502 WI (5), 503 SP (5) Bezkorovainy.

BCH 531, 532

Advanced Medical Biochemistry I, II. Designed for first-year medical students who are excused from BCH 471-73 on the basis of demonstrated proficiency. Contents: application of biochemical principles to the analysis of tissue function and diseases. WI, SP. (4) (2) [60 hours over two terms] Bezkorovainy.

BCH 581

Biochemical Research Techniques for Graduate Students. (4) Staff.

BCH 590

Special Topics. One topic to be given each quarter, including summers. Cycle repeats every two years. Anticipated topics to be covered and instructors are: intermediary metabolism (lipids and carbohydrates), Hayashi, Lange; nitrogen metabolism (proteins and nucleic acids), Bezkorovainy, Morley, Sky Peck; biochemistry of connective tissue, Kuettner, Kimura, Thonar, Schwartz; biochemistry of macromolecules (acids and bases, enzymology, physical biochemistry of macromolecules), Sky Peck, Thonar, Bezkorovainy, Kimura; and nutritional biochemistry, including vitamins and metalloelements, Gotterer, Sky Peck, Bezkorovainy. Topics may be deleted, combined, or other topics added at the discretion of the Graduate Program Committee. (3)

BCH 595

Seminar and Journal Club. Attendance at all seminars and completion of all journal article assignments is required of biochemistry students. (1)

BCH 602

Biochemistry of Disease. The alterations of metabolic pathways in various organs and tissue compartments are studied in relation to organ, metabolic, and genetic pathology. The biochemical derangements are illustrated with case demonstrations. Topics are selected and discussed with emphasis on current research work. The facilities of the clinical chemistry laboratory are available to illustrate biochemical changes and their significance. Prerequisite: BCH 471. (2-0-2) Morley.

BCH 611, 612, 613

Clinical Biochemistry Lecture I, II, III. The sequence will include concepts of clinical biochemistry practice, concepts and principles of toxicological analysis, statistics, laboratory management, budgeting, and personnel matters. (3) (3) (3) Mattenheimer, Dubin.

BCH 614, 615

Clinical Biochemistry Laboratory I, II. There will be six contact hours per week which will provide the student with knowledge of methodology including toxicology and drug analysis, automation, instrumentation, quality control, interpretation of test results, and use of data processing equipment. (3) (3) Mattenheimer, Dubin.

Note: BCH 611-615 are designed to meet the clinical biochemistry accreditation requirements.

BCH 621, 622, 623

Lectures in Cell Biology and Supramolecular Biochemistry I, II, III. (3) (3) (3) Aydelotte, Pauli.

BCH 624, 625

Tissue Culture and Electron Microscopy Laboratory I, II. There will be six contact hours per week. (3) (3) Aydelotte, Pauli.

BCH 651

History of Science. Elective. (2) Staff.

BCH 652

Science, Law, and Ethics. Elective. (2) Staff.

BCH 699

Research in Biochemistry. (v)

Biological Sciences

BIO 301

Advanced Biological Sciences I. Lectures present concepts related to human physiology and pathophysiology. Content areas are divided according to a body systems approach and organized conceptually to cover body defense mechanism and reproduction. Prerequisite: NSG 301. (4-0-4)

BIO 302

Advanced Biological Sciences II. Lectures present concepts related to human physiology and patho-

physiology. Content areas are divided according to a body systems approach and organized conceptually to cover maintenance of cellular environment.

Prerequisite: BIO 301. (4-0-4)

BIO 521

Biological Basis of Clinical Therapeutics. Emphasis is on understanding of the physiological and biological basis and meaning of assessments and therapies related to body regulation of certain aspects of internal cellular environment. Consideration of the relative importance of types of laboratory and other data and how they change in time for monitoring the status of internal cellular environment and the effects of various therapies. Prerequisite: PHY 555. (5-0-5)

BIO 523

The Biological Basis of Nervous System Function and Dysfunction. Lectures emphasize an understanding of the physiological and biological basis of nervous system function and dysfunction. Topics include cortical processing, intracranial pressure dynamics, disorders in mentation and consciousness, and basal ganglia disorders. Students are required to make one class presentation. (2-0-2)

BIO 531

Biological Aspects of Perinatology I. The major focus of this course is exploration of basic reproductive physiologic concepts as they pertain to the maternal-fetal unit. Selected topics also address morphologic functional changes since they are basic to the understanding and application of particular physiologic phenomena. The dynamics of parturition and the effects of normal/abnormal stress on the maternal-fetal unit are explored. Intrapartal concepts are extended to incorporate the anatomic and physiologic adaptive processes experienced by the neonate through the period of transition. Prerequisite: graduate level biological science course. (4)

BIO 532

Biological Aspects of Perinatology II. The major focus of this course is the study of basic biological concepts which apply to aberrant maternal-fetal interactions in the intrapartal and postpartal periods. Morphological and functional changes of the maternal-fetal unit which are basic to understanding, evaluation, and application in clinical practice are considered in depth. Prerequisite: BIO 521. (4)

Cell Biology

CEL 501

Cell Biology. Study of ultrastructure and function of the cell organelles; structures covered include the plasma membrane organization, cell-to-cell communication, and cell surface immunoreceptors. Also covered are the mitochondria and phosphorylation, the endoplasmic reticulum, golgi apparatus and cell secretion, the cytoskeleton and molecular basis of motility, and the nucleus and cell division. WI. (2-0-2) Eisenberg.

CEL 512

Scientific Basis of Electron Microscopy. This course provides facts about electron microscopy where possible and practical approaches where not. Techniques include: the chemical basis of fixation; size and shape changes during fixation, dehydration, and embedding; plastic and frozen thin sectioning; selective staining and immunocytochemistry; autoradiography. Also discussed will be the physics of electron optics and the theory of transmission, scanning, high voltage, and x-ray detector electron microscopy. Instructor's permission. SP. (2-0-2) Eisenberg.

CEL 522

Electron Microscopy Laboratory. Practical techniques of electron microscopy are addressed. Students dissect, fix, and imbed tissue. They will be taught the use of the ultramicrotome to stain thin sections and the use of the electron microscope. The goal of the course is the preparation of electron micrographs of research quality. Extensive time for practical use of the equipment will be available. Prerequisite: CEL 512, SP. (0-8-4) Eisenberg.

CEL 531

Stereology. This course will present practical and theoretical approaches to measurement of anatomical structures. General principles of estimation of volume surface area and number will be covered by stereology and other techniques. Instructor's permission. (2-0-2) Eisenberg.

CEL 533

General Pathology. The general concepts of pathology are studied with an introduction to cell injury, inflammation, immune response, metabolic and toxic pathological processes and neoplasia. The lectures and seminar groups are accompanied by laboratory work in the microscopic anatomy of pathological changes. Prerequisite: ANA 451 or instructor's permission. FA. (3-4-5) Pauli.

CEL 599

Independent Study. (v-v-v)

Clinical Concepts and Skills

CCS 501, 502

Clinical Concepts and Skills I, II. The student is given a comprehensive introduction to clinical medicine, utilizing the resources of the Medical Center and the Rush network hospitals. Studies are primarily tutorial, but texts, audiovisual, and mechanical aids are available for self-study. Initially, students work with instructors and peers learning to elicit a history and do a general screening examination. This is followed by extensive experience working with patients under the supervision of practicing physicians, with emphasis on eliciting historical information and gaining experience in physical examination techniques. Demonstration of pathological abnormalities and clinical pathological correlations are emphasized. Taught over three terms. [125 hours] Graettinger, McLaughlin, Vanderberg.

Dermatology

DRM 616

Dermatology. Students participate fully in all of the clinical and teaching activities of the Department of Dermatology, and are responsible for initial evaluation of outpatients and inpatients and inpatient consultations. Dermatologic problems are studied under the direct supervision of the departmental staff; diseases are considered from the standpoint of etiology, pathogenesis, diagnosis, course, and treatment. Skin biopsy applications and techniques as well as histopathologic interpretation are emphasized. Skin therapeutics are taught, stressing biochemical and physiological considerations. Prerequisite: MED 503. [4 weeks] Pearson.

Family Medicine

FAM 601

Core Clerkship in Family Practice. The objectives of the family practice clerkship are acquisition of: (1) knowledge and skill in recognizing and dealing with the common physical and behavioral health problems encountered in a broadly based primary care practice; (2) an understanding of the use of consultants, subspecialists, and specialized diagnostic and therapeutic resources by the family physician; (3) an understanding of available community resources to meet the needs of patients; and (4) understanding of and experience with the management aspects of ambulatory medical care. To accomplish these objectives, the student will spend four weeks either in an approved model family practice center or in a preceptorship with an experienced family physician and will return to Rush Medical College five half-days during the rotation for didactic lectures. The student will work as a colleague with the family practice faculty members and residents, including such activities as the office, nursing home, emergency calls, and home visits. FA, WI, SP, SU. [4 weeks] Dent.

FAM 602

Advanced Family Practice. To provide students with an intensive ambulatory care experience at one of the Rush Medical College family practice centers in order to have the students: (1) develop a problem directed approach to evaluating patients in an outpatient setting; (2) begin to deal with the time constraints of a busy practice; (3) enhance the skills learned in the family practice core clerkship concerning proper management of broad-based primary care problems; and (4) augment exposure to practice management problems. A minimum of 20 hours per week will be spent in the family practice center working with senior family practice residents and faculty. Prerequisite: FAM 601. FA, WI, SP, SU. [6 weeks] Brueschke.

FAM 621

Emergency Room—Christ Hospital. This rotation allows students to work in a large emergency room under the direction of emergency room residents and faculty. The objective of this course is to ex-

pose the student to the full gamut of clinical problems encountered in the emergency room. Through the evaluation and management of these problems, the student should develop some of the skills necessary for working within this increasingly important area. Prerequisites: FAM 601, MED 601, SUR 601 for third-year students; none for fourth-year students. FA, WI, SP, SU. [4 weeks] Fried.

FAM 623

Stress and Illness in the Ambulatory Setting. The objective of this rotation is to increase the student's understanding of the complex relationship between stress, psychological conflict, family support, and the clinical presentation of the patient in the physician's office. The predominant activity during this elective is evaluating a wide variety of family practice patients from a psychosocial perspective. This will be done under the supervision of the Christ Hospital family practice psychologist. Students will also participate in counseling sessions and observe counseling techniques. A comprehensive list of readings will be a requirement of the course, and weekly seminars will be scheduled on this material. The student will select one area for further study (e.g., increasing compliance with medication), and will present the material to the course director. Prerequisites: FAM 601, PSY 601. FA, WI, SP, SU. [2 weeks] Zitter.

FAM 625

Alcoholism Rotation—Christ Hospital. This elective is designed to provide the student with greater knowledge and expertise in diagnosing and managing alcoholism. The student will work in the Alcoholism Detoxification Center and Alcoholism Rehabilitation Center at Christ Hospital. There will be opportunity to follow up patients in the outpatient aftercare program. The student will be responsible for managing the medical and emotional problems of the patients from these units under the supervision of family practice residents and attendings. The student will also partake in the daily individual treatment, in weekly Alcoholics Anonymous meetings, and in family counseling sessions. No call is expected, but the student will be required to work late two nights per week. A required reading list and bibliography as well as slide packages and teaching films will be provided. Prerequisite: FAM 601. FA, WI, SP, SU. [2-4 weeks] Range, Sherin.

FAM 641

Urban Primary Care—Woodlawn Setting. A preceptorship with a family physician in an urban solo practice with these objectives: (1) exposure to various aspects of primary care in a community setting; (2) understanding the relationship between health care delivery and medical illness as they are affected by financial and environmental factors; (3) appreciation of the special relationship between a family doctor and his/her patient; interaction with the patient and, if warranted, the family; and (4) promotion of preventive health care education of the patient with regard to his/her particular illness while stressing the importance of the patient's involvement with his/her own health maintenance. Prerequisite: FAM 601. FA, WI, SP, SU. [4 weeks] Young.

FAM 642

Community Medicine—Stickney Clinic. Stickney Clinic is a community funded health clinic, serving the primary care needs of Stickney, Illinois (a suburb west of Chicago). Students taking this rotation will evaluate and manage patients in this broad-based ambulatory care experience providing care to an underserved patient population. Prerequisite: FAM 601. FA, WI, SP, SU. [4 weeks] Largosa.

FAM 643

Community Medicine—ANCHOR HMO. The objectives of this rotation are: (1) the ability to perform a comprehensive physical examination under the supervision of a family physician, and to establish an optimum treatment approach that includes a discussion of life-style changes with the patient; (2) to develop an understanding of family practice and its special relationship to health maintenance organizations; (3) to observe several unique aspects of a voluntary, prepaid health care organization including observation of its utilization review system and the handling of patient problems; and (4) to observe and participate in a group health education seminar. Prerequisite: FAM 601. FA, WI, SP, SU. [4 weeks] Miller.

FAM 644

Wholistic Health Care Centers. The objectives of this rotation are to: (1) demonstrate how a health care team may function in the ambulatory care area; and (2) have students participate in the health care of patients, encompassing medical, psychological, and spiritual issues. There is a particular emphasis upon comprehensive health planning and wellness promotion. The health care team of the Wholistic Center consists of physicians, nurses, and a minister. These individuals work together to formulate the goals and strategies for therapy of Wholistic Center patients. Prerequisite: FAM 601. FA, WI, SP, SU. [4 weeks] Ferral is Oak Lawn director; Humowiecki is Oak Park director.

FAM 645

Suburban Private Practice—Oak Lawn. This rotation is a preceptorship conducted under an experienced family physician who has a suburban Chicago practice. The student taking this course will be allowed to work in all aspects of the doctor's practice. In addition to inpatient and outpatient care duties, there will be exposure to the other hospital and office responsibilities of a busy family physician. Prerequisite: FAM 601. FA, WI, SP, SU. [4 weeks] Shobris.

FAM 651

Rural Primary Care—Streator. This rotation is a preceptorship with an experienced family physician practicing in Streator, Illinois. Streator is a small town (population 15,000) located 90 miles south-west of Chicago. The student will experience what a family physician's practice and role within the community are in this rural setting. Prerequisites: FAM 601, MED 601, PED 601, OBG 601. FA, WI, SP, SU. [4 weeks] Gottemoller.

FAM 652

Rural Primary Care—Galesburg. This preceptorship allows a senior medical student to work with a family physician in a small Illinois town (Galesburg), and develop a good understanding of how both family practice and medicine in general are practiced in a smaller community. The use of both local and remote consultive services will be demonstrated, as will the community involvement of family physicians. Since the physician who is serving as preceptor works in a group practice, the student will experience how a group practice of family physicians affords certain advantages both for the physician and his/her patients. Prerequisites: FAM 601, MED 601, PED 601, OBG 601. WI. [4 weeks] Currie.

FAM 653

Primary Care—College Health Service. A preceptorship at the Illinois State University Student Health Service at Normal, Illinois. The emphasis will be on the medical and psychological problems of young adults. Skills in promoting a healthy life-style will be presented. Prerequisite: FAM 601. FA, WI, SP. [4 weeks] Devitt.

FAM 661

Combined Family Practice/Psychiatry. The purpose of this elective is to provide students with greater skills and experience in interviewing and assessing ambulatory patients; particular emphasis will be placed on crisis intervention and supportive psychotherapy in the context of what a family physician might handle in his/her office. The student will spend four days per week in the Christ Hospital Family Practice Center with extensive videotaping of the patient/student encounters. These videotapes will be assessed both at Christ and at Rush where the student will return one day per week for a lecture series and supervised interviews under the auspices of Rush Medical College psychiatry faculty. Rush psychiatrists will also come to the Christ Hospital Family Practice Center to further assist in the teaching of the elective students. Prerequisites: FAM 601, PSY 601. FA, WI, SP, SU. [4 weeks] Dent, Zadylak.

Genetics**GEN 601**

Medical Genetics. Diagnostic, therapeutic counseling, and laboratory experience are provided through direct contact with patients and laboratory facilities. Fourth-year standing. Elective. FA, WI, SP. [4 weeks] P. Wong

Gerontology**GER 452**

The Aging Process: An Inquiry. A survey of aging, focusing on the normal aging process, as seen in and by contemporary society. Through simulation and problem solving, the nonelderly student has an opportunity to develop insight into what occurs with the actual aging process. (2-0-2)

GER 503

Introduction to Social Gerontology. An introduction to social, political, and economic forces affecting the older adult in American society. The impact of an increasing number of older adults on the rest of society is analyzed. (3-0-3)

Health Care Education

HCE 454

Development of Instructional Media. An introductory experience in the art of communication via the media. The student will be given an overview of communication theory and its relationship to the communication process. The student will then apply that theory by designing an instructional media program for a specific target audience. (2)

HCE 501

Introduction to Teaching and Teaching Strategies. This course is designed to provide essential background of teaching including philosophy, learning theory, learning domains, and cognitive style. Selection of content and sequencing will be related to particular teaching strategies: lecture, discussion and questioning, case, and gaming. (2-0-2)

HCE 503

Introduction to Evaluation Approaches and Testing and Measurement. This course is designed to present general evaluation models including the mastery model differentiating between criterion and norm-referenced evaluation. Specific aspects of cognitive test item construction and clinical performance evaluation will be included. (2-0-2)

HCE 511

Clinical Teaching Practicum. Students will assist a clinical teacher in teaching undergraduate nursing students during a field experience. The student will assist in daily planning of educational experiences, conducting seminars, conferences and formal presentations. Opportunity will also be provided to develop student-teacher/faculty-faculty relationships. Students will participate in evaluation conferences. Prerequisite: HCE 501 or 503. (2-6-4)

HCE 522

Production of a Media Presentation. Under the guidance of biomedical communications staff, the student will coordinate and perform all activities relating to the production of a media presentation. The student is expected to use the finished product to provide information or instruction for a specific target audience. (2)

HCE 525

Communication in the Health Professions. The student will explain the purpose, function, and application of specific communication techniques to the health care setting. The student will develop a functional understanding of selected principles of communication theory and human learning. Practice in applying the principles of language and other symbol systems, body language, simulation, visual literacy,

group process, and similar approaches will be provided. (3-0-3)

HCE 531

Curriculum Design and Development. Design facets related to articulation and trends in nursing education will be presented. Curriculum organization and development will be specifically related to subject matter, broad fields, principles, activity and experience, core, concept, mastery, and systems. (2-0-2)

HCE 533

Introduction to Instructional Design in the Health Sciences. The student will develop a basic understanding of the learning process by preparing a teaching unit in a content area of choice and for a specified group of learners. The student will define or explain selected principles of learning as they apply to adult learners. The student will develop skills in evaluating teaching effectiveness. (3-0-3)

HCE 541

Administration of Nursing Education. An overview of selected topics covering trends and issues, principles, concepts and theories of administration; key components of nursing educational administration include topics such as faculty and student affairs, curriculum, finance and other related areas. Also included are an analysis of the role of the chief administration officer and preparation for administrative leadership. (2-0-2)

HCE 561

Value Analysis of Health Care Issues. Study of the process of value analysis as applied to phenomena in health care. Inquiry into the effects of values on the development of education, research and clinical practice and on the ethical and legal issues which affect health care delivery. (3-1-3)

HCE 571

Writing for Publication. Emphasis is on the writing process, beginning with the gestation of an idea through completion of a potentially marketable article for a nursing or professional journal. Practical application is stressed. (3-0-2)

HCE 581

Introduction to Research. The student develops skill in critically analyzing research studies, formulating research problems, designing research methods, using descriptive and inferential statistics to interpret data, analyzing data using parametric and nonparametric statistical models, and developing beginning competencies in the use of computers in research. (3-3-4)

HCE 583

Clinical Investigation I. A seminar course based on the philosophy of science. The central aim of the course is to provide a basis for the utilization of the methods of science in professional practice. Content includes introductory statistics, research methodology, and ethical and legal considerations in clinical research. Prerequisite: introductory statistics. FA, SP. (2-0-2)

HCE 584

Clinical Investigation II. A continuation of HCE 583 Clinical Investigation I. WI, SU. (2-0-2)

HCE 595

Teaching Practicum. A field experience during which the student assists a clinical teacher in teaching staff, patients, and particularly undergraduate nursing students. The student will be involved in daily planning for educational experiences, conducting clinical conferences and informal seminars as well as formal teacher presentations. Opportunity will be afforded to develop student-teacher relationships as well as to participate in clinical evaluation conferences. Experience will be provided in presenting content using verbal interaction as well as written formats which incorporate instructional media. (1-4)

Health and Society**H&S 461**

Culture, Race, Poverty, and Health Care. Through selected, identified readings on race, values, stereotypes, frames of reference, poverty, and health care delivery using learning through discussion as a model for discussion, the student will have the opportunity to develop critical thinking in the areas of race, poverty, and health care, and apply it to nursing care. (3)

Health Systems Management**HSM 301**

Health Care Management. Organizational design and managerial processes of planning, organizing, directing, and controlling, as well as the dynamics of managerial jobs, are studied. Emphasis is on management strategies and techniques in the area of health care delivery. (3-0-3)

HSM 452

Contemporary Analysis of the Health Science Professions. A seminar study group approach to selected contemporary issues in the health professions. (The selection of issues changes from time to time as high-intensity trends develop or as student needs develop.) The issues selected range across the social, ethical, legal, legislative, economic, and historical roots of the health professions. Senior or graduate standing. (2-0-2)

HSM 501

Medical Care Organizations. An overview of medical care systems, current problems in health care and an analysis of the administration of personal health care delivery in the United States. Attention will be given to the role of health administrators' types of health care providers, health care resources, and financing mechanisms. (4)

HSM 504

Management Issues in Nursing. The theoretical and practical aspects of several current issues in nursing management are explored. Students are

expected to examine critically several possible approaches to each issue. Issues include internal organization, power structure, external forces, cost management and quality assurance. (3-0-3)

HSM 506

Medical Sociology. An examination of the sociological, psychological and behavioral dynamics of practitioners and groups within the health care delivery system. (3)

HSM 511

Administrative Decision Making. An understanding of factors affecting decision making, and the application of data gathering and analytical techniques to the process of making multiobjective decisions. (3)

HSM 515

Human Resource Management. An understanding and application of the human relations skills needed by the manager in an environment constrained by federal and state legislation. Personnel decision making as it relates to recruitment and hiring, nondiscrimination, compensation practices, labor organizations and employee development are among the areas covered. (4)

HSM 516

Personnel/Compensation Systems. An analysis and understanding of compensation theory, including motivational aspects, labor costs and manpower issues. (3)

HSM 517

Labor Relations. An introduction to the principles and practices of labor relations as applied to the management of health care organizations. (3)

HSM 522

Multi-Institutional Arrangements. An analysis of goals and organizational structures of multihospital systems, and an understanding of causes for this trend, barriers to development, advantages/disadvantages and future trends. (3)

HSM 524

Treatment Process. An analysis of the diagnostic and treatment processes for selected diagnosis through concurrent review of patient experiences under the guidance of attending medical staff. (1)

HSM 525

The Primary Nursing System. Primary nursing as both a philosophy and an organizational arrangement is examined. Topics include the primary and associate nurse roles, reciprocal role changes required with the primary nursing system, concepts basic to planning, implementing, and evaluating primary nursing, and cost effectiveness. (3-0-3)

HSM 526

Nursing Management: Planning for the Delivery of Service. This course will explore the principles of planning inherent in the development and organization of systems to deliver nursing care. Experts in various clinical nursing fields will discuss recent advances and clinical trends. Class participants will discuss the process, critical and potential problems encountered in organizational development and delivery of nursing care. (3-0-3)

HSM 527

Introduction to Epidemiology. An understanding of the principles of epidemiology through an analysis of the patterns of disease occurrences in the human population and this application to the management and planning of health care services. (2)

HSM 528

Health Care Environment: An Organizational Perspective. Introduction to various theories of organization behavior and their relevance to management of clinical and patient care processes. Special emphasis is on problems related to implementing change in the health environment at both the corporate and unit levels in the organization. Focus includes use of control systems to monitor the progress or stagnation of an institution. Limited enrollment. (4-0-4)

HSM 533

Health Economics. Application of economic tools and theories to the delivery of health care services. (4)

HSM 534

Health Care Finance I. Understanding and knowledge of financial and management accounting principles. (4)

HSM 535

Health Care Finance II. Knowledge of hospital reimbursement, including payment methods, processes and policy issues. Knowledge of budgeting, including its relationship to planning, forecasting, operating budgets, cash and capital budgets. (4)

HSM 536

Corporate Finance. Knowledge of a hospital's treasury function, understanding of investment management and capital financing. (3)

HSM 537

Health Care Finance Seminar. The student will develop, implement, and evaluate approaches to improve the financial performance of health care programs and institutions through case studies and computer simulation. (3)

HSM 543

Health/Corporate Law. Understanding of contract law, tort law, corporate law, labor law, and civil procedures provide a working knowledge of the law as it impacts health care delivery systems. (4)

HSM 545

Organizational Analysis. The student will obtain an understanding of individual and group dimensions of organizations, including a knowledge of organizational structure and processes. Opportunities to apply theory and research findings through case study review will be provided. (3)

HSM 546

Laws and Regulations in Health Care of the Disabled and Elderly. State and Federal laws and benefit programs for the disabled and elderly as they affect economic and social structures in providing basic income, health care, and social services are studied. Includes discussion of Social Security, Medicare, Medicaid, Older Americans Act, Patients' Rights, Nursing Home Law, and others. (2-0-2)

HSM 547

Labor Law. The course covers these topics: historical understanding of the law affecting labor/management relations, employment discrimination, regulation of wages and work hours and an understanding of the application of current labor laws to employment within the health care setting. (3)

HSM 552

Management Information Systems. The student will develop an understanding of management information systems concepts and theories and their role in health care management. (4)

HSM 553

Computers for Health Systems Managers. The student will acquire technical and conceptual computer skills and an understanding of the role of data processing in hospital administration. (4)

HSM 555

Advanced Organizational Analysis. This course covers organizational change and control techniques, behavioral theories of management, goal setting and conflict resolution. (3)

HSM 556

Medical Group Practice/Physician Compensation. Topics covered include medical group practice development (including health maintenance organizations), related concepts of physician compensation, and application of management techniques to non-profit and proprietary medical practices. (3)

HSM 557

Quality Assurance/Risk Management. Topics include the principles of risk management and quality assurance, and an analysis of how these interface with medical malpractice. (3)

HSM 561

Corporate Planning/Public Policy I. This course covers planning theory, terminology, techniques and conceptual models for institutional and area-wide processes. (4)

HSM 562

Corporate Planning/Public Policy II. The student will learn how to apply planning and marketing techniques in an institutional setting. Strategic and operational plans completed in affiliated network hospitals will also be covered. (3)

HSM 565

Facilities Planning. The student will acquire a knowledge of phases of facility planning including capital expenditure planning, budgeting and control. (3)

HSM 567

Marketing and Diversification. The student will acquire an understanding and working knowledge of marketing theory, terminology, techniques and analytical approaches for marketing a health service organization. (3)

HSM 571

Systems of Health Care. Seminar course in the study of the health care delivery system in the U.S. Particular emphasis on identifying historical forces which have shaped the current system for health care;

the organization of the hospital and the medical center; current manpower roles in health care; and the current issues that face the health system today. Discussion will also focus on external forces and controls that substantially affect the health care system. Students will be expected to write a research paper and present it orally to the class. (2-0-2)

HSM 572

Community Health Assessment. This course covers approaches aimed at assessing health needs, health status and their relationship to health resources. Concepts of demography, epidemiology and economics are applied in determining needs and demands for health care services. Students study approaches to determining market share and its application within various distribution systems. Field work is required as part of this course. (3-0-3)

HSM 573

Evaluating Quality of Nursing Care. Professional, legal, and social bases for evaluating quality of care provide the foundation for examination of current approaches to assessing the quality of nursing care. Some specific methods and their uses in quality assurance programs and some problems and issues in quality assessment are discussed. (3-0-3)

HSM 574

Health Care Delivery Systems. In this survey course, the student compares the major patterns of hospital ownership, describes the corporate structure relative to hospital organization and governing authority, explains selected governmental regulations on the hospital industry, describes risk management programs in terms of purpose and the interrelationship of component activities, summarizes the politics and economics of community health planning, and describes the management process in terms of the four areas of managerial activity. Limited to clinical nutrition students or permission of instructor. (3-0-3)

HSM 583, 584

Statistical Techniques I and II. Topics include graphical methods, descriptive statistics, probability theory, nonparametric comparison, study of linear models, basic experimental design concepts, simple and multiple regression, analysis of variance, time series and forecasting. SAS is used to facilitate data analysis. (4) (4)

HSM 585

Quantitative Methods. The student will acquire an understanding of quantitative techniques as applied to hospital decision making including an understanding of hospital departments with a view to maintaining and improving operations. (4)

HSM 595

Graduate Seminar. This capstone seminar of the health systems management program addresses selected topics and issues in health care today with the broad participation of faculty and eminent leaders in the field. (3)

HSM 597

Graduate Project. This is a capstone course of the health systems management curriculum that provides the student an additional opportunity to apply problem-solving skills and evaluation techniques during the conduct of a management study at Rush-Presbyterian-St. Luke's Medical Center or an affiliated institution. Major emphasis is placed on developing students' report writing and oral presentation skills. (2 for fall quarter, 1 for winter quarter, 3 for spring quarter)

HSM 598

Thesis. Health systems management students complete a rigorous, detailed final project requiring research design, methodology, literature review, analysis and conclusion. Students may select a thesis as an alternative to the Graduate Project. (v)

HSM 599

Independent Study. The student submits an independent study proposal to the department curriculum committee for approval prior to registration. (v)

Hematology

HEM 301

Hematology I. Study of normal hematopoiesis including development, metabolism, and function of red cells, white cells, and platelets and an introduction to the various associated hematologic disorders. Includes laboratory experiences dealing with basic routine tests performed in a clinical hematology laboratory, such as simple automated cell counting, differential counting, and sedimentation rates. (3-6-5)

HEM 425

Hematology II. Review of normal hematopoiesis and an in-depth study of erythrocyte disorders, their etiologies, pathophysiology, clinical features, and significant laboratory findings. Prerequisite: HEM 301. (2-0-2)

HEM 426

Hematology III Continuation of HEM 425 with an in-depth study of leukocyte and hemostasis disorders that covers etiology, clinical features, and significant laboratory findings. Prerequisite: HEM 425. (2-0-2)

Humanities

HUM 461

Physician as Writer. An exploration of selected fiction, chronicles and autobiographies by distinguished twentieth century physician-writers (including William C. Williams, Chekhov, and Azuela). Focus will be on writers' unique responses to questions of medical ethics, involvement in social issues, and doctor-patient relationships, as well as on physician as philosopher and humorist. (2-0-2) Vidaver, Cohen.

HUM 462

Physician on Stage and in Fiction. An investigation of distinguished nineteenth and twentieth century plays and novels which feature the physician as a major character. Works by G. B. Shaw, Eugene O'Neill, Friedrich Durrenmatt, Tennessee Williams, Henrik Ibsen, and Sinclair Lewis highlight the physician in crises, profile scientific men, portray the psychiatrist as character and present the American regional practitioner. (2-0-2) Vidaver, Cohen.

HUM 463

Disease as Subject in Contemporary Literature. An examination of the depiction of disease in outstanding fiction and poetry, as well as in memoirs, journals and personal narrations of some distinguished contemporary writers who faced disease and analyzed their experiences with acute perception. Works by Albert Camus, Andre Gide, Eleanor Clark, John Updike, Thomas Mann, John Berryman, and Katherine Ann Porter will be considered. Lectures, readings and discussion. (2-0-2) Vidaver, Cohen.

HUM 464

Benjamin Rush & Sigmund Freud: Biography & Autobiography. Elective seminar focusing on the lives of Drs. Freud and Rush through a close look at letters, writings and autobiographical statements. In discussion and lecture the class will construct from these autobiographical materials the beginning of biographical statements and will consider the method and purpose of biography—the telling of someone's life history. (2-0-2) Strozier.

Immunology

IMM 301

Basic Immunology. An introduction to the basic concepts and terminology of immunity including development, structure, and function of the lymphoid systems, the basis of antigenicity, antibody structure, methods of detection and measurement, mechanism of cellular immunity, white cell function, hypersensitivity reactions, the complement system, and mechanisms of immune suppression and tolerance. Methods of laboratory evaluation of humoral and cellular immunity are introduced. (3-0-3)

IMM 402

Clinical Immunology. Study of clinical and applied immunology as it relates to the role of the immune response in production of disease; primary and secondary immunodeficiency atopy and other forms of hypersensitivity, autoimmunity, transplantation and tumor immunity. The use of immunology as a diagnostic, prognostic and therapeutic aid is studied. Prerequisite: IMM 301. (2-0-2)

IMM 403

Clinical Serology. Students will learn to apply the fundamental concepts of antigen-antibody interactions to routinely performed assays of syphilis and nonsyphilis serology. Laboratory sessions cover proficiency in performance and familiarity with pur-

pose, principle and interpretation of the following tests: RPR, CSF-VDRL, TPA, FTA-ABS, Monospot, Monotest, Heterophile, ASO, AHT, ANTI-DNAase B, RF Latex, RF SCAT, Anti-Thyroglobulin and Anti-Microsomal. Prerequisite: IMM 301. (2-6-3)

IMM 431

Immunohematology. Blood group antigens and antibodies from the discoveries of Landsteiner in 1900 to the present day are studied. Blood banking procedures involved in drawing, testing, storing, and transfusing whole blood and its components are discussed. The laboratory section of this course will deal with the basic blood bank procedures including ABO grouping, RH typing, compatibility testing, and special antibody studies. Prerequisite: IMM 301. (3-6-5)

IMM 501

Immunology. The student is given an introduction to immunology, with emphasis on basic concepts and principles, followed by a study of their clinical applications. Topics include antibody structure; antigen-antibody reactions; genetic and cellular control of antibody synthesis; the complement system; phagocytosis, inflammation and nonspecific immunity; immediate and delayed hypersensitivity; cellular immunity; transplantation immunology and immunogenetics; immune deficiency disease; and autoimmune processes and rheumatology. A three-hour demonstration laboratory is presented in which the student can become familiar with the procedures used in the clinical immunology laboratory. The clinical emphasis is maintained through patient evaluation and the use of the clinical laboratory in studying individual problems. FA. (5) [52 hours] Lint.

IMM 521

Basic and Clinical Immunology: Lecture Segment. A comprehensive introduction to immunology, with emphasis on basic concepts and principles, followed by a study of their clinical applications. Topics include antibody structure; antigen-antibody reactions; genetic and cellular control of antibody synthesis; the complement system; phagocytosis, inflammation, and nonspecific immunity; immediate and delayed hypersensitivity; cellular immunity; transplantation immunology and immunogenetics; and tumor immunology. FA. (5-0-5) Lint.

IMM 522

Basic and Clinical Immunology: Tutorial Segment. Tutorial sessions encompassing a detailed discussion of topics encountered in IMM 501. FA. (3-0-3) Lint.

IMM 531

Immunogenetics and Cellular Immunology I. A comprehensive introduction to modern immunogenetics including major and minor histocompatibility complex associated cell surface markers, immunoglobulin complex genetics, T- and B-cell receptor molecules, genetic control of immune responses and disease associations. Cellular immunology considers T- and B-cell ontogeny, cellular interactions and effector cell functions. Alt. WI. (4-0-4) Plate.

IMM 532

Cellular Immunology II and Tumor Immunology. Current topics in cellular immunology with an emphasis on immunological regulation, MHC restriction, altered self-responses, nonspecific and specific lymphokines and generation of T-cell diversity. Topics to be covered in tumor immunology include tumor antigens, the nature of host anti-tumor immune effector mechanisms, the effect of malignancy on host immune competence, the effect of conventional cancer therapy on host immunity, and the immunological approach to cancer treatment. Alt. SP. (4-0-4) Plate, Braun, Harris.

IMM 541

Structure and Immunobiology of Membranes. Introduces chemical and physical approaches involved in understanding the intricacies of membrane structure and function. Emphasis is placed on the physicochemical dynamics of lipid-lipid and lipid-protein interactions. Included are discussions of available protocols and techniques used in the immunobiological analysis of membranes. Alt. WI. (4-0-4) Potempa.

IMM 543

Molecular Immunology. Topics include structure of immunoglobulins, hapten-antibody reactions, the antibody combining site, antibody heterogeneity, nature of antigens, immunochemistry of membranes, structure of histocompatibility and blood group antigens, and the molecular basis of antibody diversity. Alt. WI. (4-0-4) Potempa.

IMM 545

Complement. A detailed consideration of the structure and function of the complement proteins and inhibitors, modes of activation and control, biological functions, genetics, and inborn and acquired abnormalities. Alt. SP. (4-0-4) Mold.

IMM 551

Phagocytosis and Host Defense. The first half of this course involves a consideration of mononuclear phagocytes, polymorphonuclear leukocytes, opsonization, mechanisms of chemotaxis, phagocytosis and intracellular digestion, metabolic pathways in phagocytes, and the role of the phagocyte in disease. The second segment introduces concepts of nonspecific host defense mechanisms, the secretory immune system, and host defense against parasites. Alt. SP. (2-0-2) Lint.

IMM 553

Immediate Hypersensitivity and Inflammation. The first segment of this course focuses on the structure and regulation of IgE synthesis, the definitions of allergens, mechanisms of histamine release from human cells, and experimental models used to study allergic phenomena. The second segment introduces the essential concepts of the inflammatory response. Topics include the interactions of humoral effector mechanisms (i. e., the clotting, kinin, plasmin, and complement systems) with each other and with both blood-born and tissue-fixed cellular elements. Alt. WI. (4-0-4) Thomas, Fiedel.

IMM 561

Clinical Immunology. A lecture and laboratory course which, during each of ten weeks, reviews critical topics in clinical immunology from three standpoints on consecutive days: (1) laboratory assays including history, principles and procedures; (2) clinical correlations including indications, interpretations and appropriate case studies; and (3) applications in investigation including significant past and current patient- and disease-related observations, current issues and elaboration of experimental models. Topics considered include immunology of infectious disease, immunohematology, histocompatibility typing, complement, autoimmune diseases, lymphoproliferative diseases, immunodeficiency diseases, tumor immunology, and allergy. Alt. SP. (4-0-4) Landay, Luskin, Gewurz.

IMM 571

Laboratory Tutorial. A program of laboratory tutorials designed to acquaint the student with two or three separate research laboratories in the first year. The student will become familiar with the field and get assistance in advisor selection. (v-v-v) Staff.

IMM 590

Special Topics. Designed to consider in-depth selected contemporary topics in immunology, such as host-parasite relationships, ontogeny and transplantation immunology, hypersensitivity states, etc. FA, WI, SP, SU. (v-v-v) Staff.

IMM 598

Pre-Thesis Research. (v-v-v) Principal advisor.

IMM 599

Independent Study. Specialized course work designed around the particular needs of an individual student. (v-v-v) Staff.

IMM 699

Thesis Research. (v-v-v) Principal advisor.

Medicine-Internal**MED 501, 502, 503**

Clinical Pathophysiology I, II, III. This course serves as a bridge between the basic sciences and clinical medicine. Its purpose is to make the student conversant with the limits of biochemical and physiologic responses under a variety of stresses and disease states. The course emphasizes three basic areas: (1) abnormal general cellular biology: infections, immunology; (2) homeostasis: abnormalities of acid-base balance, fluid-electrolyte balance, intermediary metabolism, nutrition, endocrine, growth-development and aging; and (3) organ system pathophysiology: cardiovascular, pulmonary, urinary tract, gastrointestinal, hepatic, hematopoietic, lymphatic, cutaneous, rheumatology, and locomotor. The course closely coordinates with topics in the pathology course to allow the student to apply knowledge developed in that discipline. It also is coordinated with didactic material to be presented during the third-year clinical program. Course format

will involve lectures, workshops and conferences. Course evaluation of student performance will be based upon written examinations, a required essay, and student participation during lectures and conferences. 501 FA, 502 WI, 503 SP. [240 hours] Liebson, Weens.

MED 601

Core Clerkship in Internal Medicine. The medicine clerkship is designed to provide the student with basic clinical skills and knowledge of internal medicine, and to provide a supervised program of instruction in all modes of medical care. It is a total departmental function in cooperation with the house staff and attending faculty. Each student is expected to participate in all floor functions and do extensive investigation of clinical problems assigned. Prerequisite: CCS 502. SU, FA, WI, SP. [12 weeks] Rosen.

MED 602

Advanced Internal Medicine. This is intended for students who have successfully completed the clerkship in medicine. Students function at an advanced level, doing histories and physical examinations, diagnostic evaluations, and initiation of appropriate therapy. There is close supervision by the staff of the Department of Internal Medicine as well as a senior staff member of the parent hospital. The course is primarily intended for students desiring additional clinical experience in internal medicine. Prerequisite: MED 601. SU, FA, WI, SP. [8 weeks] Carton.

MED 605

Geriatric Medicine. The student will assume the role of a "subintern" under the direct supervision of a senior resident in medicine and course director on the Acute Geriatric Ward, 5 South (Johnston R. Bowman Health Center for the Elderly). The experience will serve as an introduction to geriatric internal medicine. More than the usual initiative and responsibility is expected on the part of the student. Case write-ups in the traditional format are used; patient assignments will be made through the supervising resident. Scheduled ward rounds and formal and informal conferences are an integral part of the experience. Students will be provided board and room when on night call. Prerequisite: MED 601. SU, FA, WI, SP. [4-8 weeks] R. Pomerantz.

MED 611

Clinical Cardiovascular Medicine. At Rush-Presbyterian-St. Luke's, clinical experience provides the study of the diagnostic spectrum of cardiac evaluation including bedside assessment, electrocardiography, vector-cardiography, phonocardiography, ultrasound, cardiac catheterization, coronary angiography, and exercise testing. Patient study is carried out under the direction of the clinical staff. Regular staff conferences are concerned with clinical problems. The theoretical and practical aspects of electrocardiography are presented. At network hospitals, experience in bedside diagnostic and non-invasive evaluation is emphasized. Experience in

the coronary care facility at each hospital enhances the acquisition of knowledge of electrocardiographic interpretation. Cardiac catheterization is available at some network hospitals. Students may elect the clerkship at Presbyterian-St. Luke's Hospital or at a network hospital. Assignments will be made according to preference in the order received. Students should indicate first, second, and third preferences. Prerequisite: MED 601. FA, WI, SP, SU. [4 weeks] Liebson.

MED 612

Medical Intensive Care. This course provides experience in the recognition and management of medical emergencies, particularly the use of temporary pacemakers, bedside hemodynamic monitoring, use of respirators, and management of renal emergencies and cardiac arrhythmias. Patient study is carried out under the direction of the clinical staff. Regular staff conferences are concerned with clinical problems. Prerequisite: MED 601. FA, WI, SP, SU. [4 weeks] Codini.

MED 613

Introduction to Cardiovascular Research. The student's program is individually planned, with emphasis on understanding basic research techniques rather than on the accomplishment of a specific research project. Students participate in the research program of the Section of Cardiology, including projects in human hemodynamics, cardiogenic shock, noninvasive studies, myocardial metabolism, cardiovascular electronics, and computer applications. Prerequisite: MED 601. SU, FA, WI, SP. [8-12 weeks] Messer.

MED 615

Emergency Medicine. The student assists in the evaluation and management of acutely ill adult patients. A combined elective including pediatric patients can be negotiated. Prerequisites: MED 601, SUR 601. SU, FA, WI, SP. [4 weeks] Hanashiro.

MED 616

Primary Care Medicine. The objectives are to provide the student a preceptor/trainee experience in an academic general internal medicine office practice, and to acquaint the student with a team approach to health care delivery, utilizing attending physicians, medicine residents, and nurse practitioners. The student will also participate in hospital rounds, and home health visits can be arranged through the Department of Community Health Nursing. Occasionally offered as two-week elective. Prerequisite: MED 601 or permission. SU, FA, WI, SP. [4-8 weeks] Kessler, McLaughlin.

MED 621

Clinical Endocrinology and Metabolism. Endocrine and metabolic disorders are studied under the direction of the clinical faculty. Students are assigned patients for workup and presentation to the faculty. The student also participates in the diagnostic evaluation and the collection and correlation of laboratory data. Independent projects and labora-

tory work are optional. Regular departmental conferences and seminars supplement clinical work, which is primarily with hospitalized patients. Prerequisite: MED 503. SU, FA, WI, SP. [4 weeks] Ryan.

MED 626

Clinical Nephrology. The clinical diagnosis and management of patients with renal disease as well as various fluid, acid-base, and electrolyte abnormalities are studied. In addition, the course is directed toward the proper interpretation of pathophysiologic findings and the practical clinical management of various disorders involving the excretory system and body fluids. Conferences and seminars are used to discuss patient problems and to help develop a broad, comprehensive understanding of the care of patients with renal disease. Prerequisite: MED 601. SU, FA, WI, SP. [4-6 weeks] Lewis.

MED 631

Clinical Gastroenterology. Clinical gastroenterology is approached by the case study method. In addition, the methods of clinical gastroenterology, gastroscopies, colonoscopies, small-bowel biopsies, liver biopsies, esophageal motility studies, and proctoscopies are performed with the clinical section. Students extensively review the literature on subjects related to single cases seen during the course of the rotation. Prerequisite: MED 601. SU, FA, WI, SP. [6 weeks] Franklin.

MED 636

Clinical Hematology. This course emphasizes clinical diagnostic hematology. Students participate with the members of the section in the study of patients. Regular review of case studies with the faculty provides the basis for in-depth studies, particularly through study of bone marrows, and other diagnostic facilities of the laboratory. There are regular section conferences. Extensive library facilities and audiovisual aids are available. Prerequisite: MED 503. SU, FA, WI, SP. [4-6 weeks] Knospe.

MED 646

Clinical Infectious Disease. Students are expected to master basic principles of diagnosis and management of patients with infections. Appropriate use of diagnostic microbiology, differential diagnosis of febrile patients and appropriate selection of chemotherapeutic agents are taught during case presentations on daily rounds. A weekly three-hour clinical and research conference is held. Prerequisite: MED 601. SU, FA, WI, SP. [4 weeks] Trenholme.

MED 651

Clinical Rheumatology. The student studies a variety of patients with rheumatologic and arthritic disorders. Emphasis is on the fundamentals of joint examination, observation and performance of laboratory examinations on synovial fluid, and familiarity with the spectrum of laboratory procedures useful in rheumatologic diagnosis and treatment. The interdisciplinary approach relies heavily on contributions of immunology, orthopedics, diagnostic radiology, physiotherapy, and occupational therapy. In addition

to hospitalized patients, experience is offered in the care of ambulatory patients. Prerequisite: MED 601. [4 weeks] Glickman.

MED 661

Clinical Oncology. Patients seen by the Section of Medical Oncology provide an ample and varied spectrum of oncological problems. Students study selected patients under the direction of members of the section. Various therapeutic approaches and complications occurring in the course of the disease are discussed. New patients are discussed at biweekly section meetings. The program stresses the importance of the combined interdisciplinary approach, using the resources of the departments of surgery and therapeutic radiology, as well as those of pathology and nuclear medicine. The weekly tumor conference, lymphoma conference, and gynecologic tumor conference are examples of such a multidisciplinary approach. Prerequisite: MED 601. FA, WI, SP. SU. [4 weeks] Harris, Rossof.

MED 671

Clinical Pulmonary Medicine. The management of patients with pulmonary disease provides the focus for the study of clinical management, interpretation and use of pulmonary function and ventilatory studies, and gas management. The essentials of pulmonary physiology are emphasized. Prerequisite: MED 601, SUR 601. FA, WI, SP, SU. [2, 4, or 8 weeks] R. Rosen.

MED 676

Clinical Hepatology. Students will participate in the Hepatology Service rounds, presenting case histories, assisting in the performance of liver biopsies, and observing a variety of endoscopic procedures. Pertinent liver biopsy material will be reviewed in clinical context. Formal and informal conferences are an integral part of the experience. Arrangements can be made to participate in ongoing research projects. Prerequisite: MED 601. SU, FA, WI, SP. [4-8 weeks] Payne.

Medical Physics

MPH 459

Radiation Safety for Research Workers. The course covers: atomic and nuclear structure, production of radionuclides, decay schemes of alpha, beta and gamma emission, radioactive decay, interaction of radiation with matter, types of detectors, pulse height spectrometry, gamma and liquid scintillation counters and counting, counting statistics and losses, radiation units, biological effects of radiation, dose calculations, radiation safety regulations, safe handling of isotopes, personnel monitoring, laboratory surveys, wipe tests, use of multichannel analyzer, laboratory experiments including calibration of a GM survey meter, gamma ray spectrometry using a sodium iodide detector, radioisotope handling techniques, wipe test surveys and decontamination and liquid scintillation counting. FA. (2-1-2) Chung-Bin, Majewski.

MPH 460

Introduction to Radiation Safety and Diagnostic Radiological Physics. The course covers: medical x-ray and gamma-ray protection for energies up to 10 MeV, equipment design and use, maximum permissible dose equivalent, fluoroscopic and radiographic equipment, gamma-beam sealed source equipment, calibration, survey procedures, personnel monitoring, production of x-rays, x-ray generators, attenuation, filtration, grids, intensifying and fluoroscopic screens, physical and photographic characteristics of x-ray film and film processing, geometry of the radiographic image. FA. (2-v-3) Chung-Bin, Mengeot.

MPH 461

Physics of Diagnostic Radiology. The course covers: fluoroscopy, x-ray image intensifiers, cine-fluorography, television, body-section radiography, stereoscopy, magnification radiography, the subtraction technique including digital imaging, copying radiographs, xeroradiography, computed tomography, ultrasound, focused nuclear magnetic resonance scanning. Prerequisite: MPH 460. WI. (3-0-3) Chung-Bin.

MPH 471

Physics of Nuclear Medicine. The course covers: mathematics for nuclear medicine, physical quantities and units, mechanics, thermodynamics, electricity and magnetism as applied to nuclear medicine, nuclear reactions, decay schemes, half-life, decay series together with parent-daughter relationships and applications, interaction of radiation with matter, detectors used in nuclear medicine, *in vitro* counting systems, liquid scintillation counting, pulse height spectrometry, imaging instrumentation including rectilinear scanner, scintillation camera, emission tomography, application of the computer to nuclear medicine including imaging and *in vivo* studies, biological effects of radiation, absorbed dose from internal sources. WI. (3-0-3) Chung-Bin, Groch.

MPH 481

Introduction to Therapeutic Radiological Physics. The course covers: basic physics; interaction of radiation with matter; definition and measurement of dose; therapy machines; physical and clinical dosimetry including backscatter, percentage depth dose, tissue-air ratio, tissue maximum ratio, isodose distributions, wedges, compensators, treatment time computations, correction for lungs and curvature; radioisotopes; radium and its substitutes, interstitial and intracavitary applications; electron beams; time-dose relationship including nominal standard dose; radiation protection; quality assurance. FA. (3-0-3) Kartha.

MPH 482

Therapeutic Radiological Physics. The five "P's" of radiation therapy are examined: prescription, physical dose, planning, precision, and pattern of treatment outcome; atomic structure; nuclear structure; fission and fission reactors; fusion; radioactive decay; natural and artificial radioactivity; interactions of particulate radiations including electrons, pions, neu-

trons, and heavy charged particles; production of x-rays, including x-ray tubes and circuits; high-energy treatment machines; interactions of x-rays and gamma-rays, measurement of exposure, radiation quality, absorbed dose; calibration of high-energy photon and electron beams; dose distributions for external-beam therapy and sealed-source therapy; computerized treatment planning; radiation protection from external and internal sources. Prerequisite: MPH 481. WI. (3-0-3) Kartha.

MPH 483

Dosimetry Applied to Therapeutic Radiology. This course is designed for therapeutic radiology trainees, including residents, and is organized as a rotation in the Section of Medical Physics. The laboratory exercises consist of the determination of single-, two-, three- and four-field isodose distributions. These exercises of distributions take into account variations of field size, source-skin distance, source-detector distance and source-axis distance. Special studies for the treatment of breast, larynx, pelvis, and head are performed. Calculations are performed by hand and by a PDP 11/45 computer. Special dosimetry problems such as in upper mantle and anterior L-shaped breast fields are performed. Prerequisite: MPH 481. SP. (0-8-4) Kartha.

MPH 484

Brachytherapy Physics. This course is designed for residents in therapeutic radiology and graduate students. Topics include: basic physics of radioactivity, units and measurement of dose; use of radioactive isotopes in clinical radiotherapy; permanent and temporary implants; interstitial and intracavitary implants as well as surface applicators; use of isotopes such as Ra-226, Cs-137, Ir-192, I-125 and Sr-90 in specific tumor sites; after loading techniques and their advantages; and use of computers in brachytherapy treatment planning. Prerequisite: MPH 482. SP. (2-0-2) Kartha.

MPH 490

Medical Radiological Physics Review. An intensive review course in all branches of medical radiological physics for those M.D. and Ph.D. postdoctoral trainees who are taking the American Board of Radiology certification examination. Prerequisites: MPH 461, 471, 482. SP. (3-0-3) Chung-Bin, staff.

MPH 491

Introduction to Computers. The course covers: basic components and history; analog and digital types of computers; binary and octal number systems; relay and transistor switches; gate; basic hardware structure of a computer including control, storage, input and output devices; interaction of CPU and core memory, program; language; basic software structure of a computer including operating system, compilers and assemblers, utility programs, user programs; programming in Basic and Fortran; real time applications. SP. (2-2-3) Wachtor.

MPH 501

Radiation Physics. The course covers: classical and quantum-mechanical theories of inelastic collisions with atomic electrons, energy loss per ion pair

by primary and secondary ionization; Cerenkov radiation; single, plural, and multiple scattering of electrons by nuclei and atoms; radiative collision of electrons with atomic nuclei including the theory of bremsstrahlung; path length and range of electrons; range-energy relations for electrons; thick-target bremsstrahlung; passage of heavy charged particles through matter; interaction of electromagnetic radiations with matter; Klein-Nishina cross sections; angular and energy distribution of Compton scattering; photoelectric effect; pair production; attenuation, absorption, multiple scattering of photons; production and absorption of neutrons. FA. (3-0-3) Jette.

MPH 502

Radiological Physics I. The course covers: ionization radiation; stochastic and nonstochastic quantities; radiometry, including radiant energy, flux, fluence, radiance; interactions including attenuation and absorption coefficients and mass-energy transfer and absorption coefficients; dosimetry including rigorous definitions of energy imparted, absorbed dose, kerma, exposure, dose equivalent, and absorbed-dose index. Ion collection: initial and general recombination in gases for parallel-plate, cylindrical, and spherical geometries for continuous and pulsed radiation with fixed and variable collection potentials. Special types of chambers are examined: free-air, cavity, electron collections, condenser, and extrapolation. National Radiation Standards and world network of primary and secondary dosimetry laboratories; design, operation, and output of various accelerators: betatron, linear accelerators, cyclotrons, synchrotrons, Van de Graaff, and microtrons. Liquid-dielectric ionization chambers and ion recombination in liquid are reviewed as are dosimetry systems used in therapeutic radiology and radiobiology. Prerequisite: MPH 501. WI. (3-0-3) Lanzl.

MPH 503

Radiological Physics II. Continuation of Radiological Physics I. (3-0-3) Lanzl.

MPH 504

Topics in Radiation Dosimetry. The course covers: track-etching phenomena including damage mechanism, latent track stability, track counting; registration of fission fragments, alpha particles, and recoil nuclei; neutron dose and spectra determinations; wall-less detectors in microdosimetry; dosimetry of low-energy x-rays; Katz and Kelleher-Rossi theories of the structure of particle tracks; thermoluminescence and radiophotoluminescence applied to dosimetry. Prerequisite: MPH 502. SP. (3-0-3) Lanzl, Rozenfeld.

MPH 505

Radiological Physics Laboratory. This is a practical course directed towards understanding of the instruments, apparatus and facilities used in applied radiation work. This course will include conducting radiation protection surveys, calibration of radiation producing equipment, shielding calculation and planning of radiation installations, carrying out scientific evaluation and essay-type reporting. The facilities

will cover equipment used for radiation therapy, diagnostic radiology and nuclear medicine. Prerequisite: MPH 502. FA, WI, SP (v-v-v) Jayaraman.

MPH 531

Radiation Biology. The course is designed to introduce students to the general principles governing the effects of ionizing radiation on living organisms. A general knowledge of radiation physics and biology is assumed. The course will consider radiation effects on a progression of organism complexities from single cell systems through organized tissue system and complex organisms through the known effects of man. Emphasis will be put on those radiobiological principles which closely relate to cancer research such as the relationship of linear energy transfer to relative biological effectiveness and the role of oxygen as a radiation modifying agent along with other protecting and sensitizing agents. WI. (2-0-2) Hanson.

MPH 559

Radiation Protection. The course covers: exposure from internal radiation sources, maximum permissible levels, protection from radioactive contamination, dose from beta particles, technical approaches for minimizing the dose, measures for reducing patient dose, shielding x-ray beams, relationship involving both radioactive decay and biological elimination, calculation of absorbed dose from gamma emitters, dose to targets outside the source volume, authorization to use radioisotopes, responsibilities of users, standards for radiation exposure, personnel monitoring, airborne contamination limits, posting of areas, protective clothing, handling tools, storage of radionuclides and waste, waste disposal including gases, and liquids and solids, transporation of radionuclides, leak tests of sealed sources, notification of authorities, formulation of standards for radiation protection, medical findings on individuals exposed to radiation, sources producing population exposure, and federal and state regulations. Prerequisite: MPH 459. FA. (3-0-3) Chung-Bin, Lanzl, Majewski, Rozenfeld.

MPH 561

Physics of Diagnostic Radiology. The course covers: x-ray generators, recording systems, H & D curves, transfer function analysis, noise analysis, measurements of MTF of screen-film systems, x-ray tube focal spot and geometric unsharpness, scattered radiation and grids, radiographic mottle, fluoroscopy and image intensifier-TV system, tomography, magnification technique, stereoscopy, ROC analysis, computed tomography, ultrasound, Monte Carlo simulation, x-ray spectral analysis, high-resolution bone radiography. Prerequisite: MPH 401. (3-0-3) Staff.

MPH 571

Physics of Nuclear Medicine. The course covers: production of isotopes, radiation detection, pulse height analysis, counting statistics, imaging theory, Fourier analysis, rectilinear scanner, scintillation camera, collimation of radiation, design for collimators, image recording, noise analysis, image processing, quality assurance, radiation safety, evaluation of image

quality, image quality indices, digital computers in nuclear medicine, dynamic and functional imaging, emission computed tomography, radiopharmaceuticals, internal radiation dosimetry, biokinetics and compartmental modeling, radioimmunoassay. Prerequisite: MPH 471. (3-0-3) Staff.

MPH 590

Medical Physics Research Seminar. This seminar serves as a forum for review of the ongoing research in the section and is attended by the faculty, appropriate staff members, fellows and graduate students. FA, WI, SP (2-0-1) Staff.

MPH 597

Introduction to Research. The student will undertake a directed project with a faculty member as an introduction to research. FA, WI, SP, SU. (v-v-v) Lanzl, Chung-Bin, Kartha, Rozenfeld, Jette.

MPH 598

Thesis Research. Under the guidance and direction of a faculty member and committee, the student originates, proposes and executes an experiment. The research should answer a significant basic research or clinical research question and should reflect a high degree of scholarship in medical physics. FA, WI, SP, SU. (v-v-v) Lanzl, Chung-Bin, Kartha, Rozenfeld, Jette.

MPH 599

Independent Study. The student will undertake a creative project design and under the supervision of a faculty member. FA, WI, SP, SU. (v-v-v) Lanzl, Chung-Bin, Kartha, Rozenfeld.

Medical Technology

MTK 303

Body Fluid Analysis. Analysis of various body fluids with emphasis on the theory and practice of clinical procedures. Component topics will include the analyses of urine, gastric juice, cerebral spinal fluid, feces, semen, transudates and exudates. (3-6-5)

MTK 304

Basic Laboratory Skills. Study and practice of basic laboratory skills used in the various clinical laboratory areas. Topics covered include instrumentation, proper use and maintenance; manual skills such as pipetting, titrating and venipuncture; preparation and standardization of reagents; and laboratory calculations. (3-12-7)

MTK 305

Patient Care Techniques. Clinical experience in the hospital patient care areas includes blood collection, specimen handling and processing procedures, as well as interaction with patients and professional staff of the hospital. Prerequisite: MTK 304. (0-6-2)

MTK 421

Practicum in Clinical Chemistry. Rotation through the hospital clinical biochemistry laboratories. The course includes the application of basic skills learned in student chemistry laboratory; instrumentation and advanced methodologies. (0-24-8)

MTK 422

Practicum in Hematology. Rotation through the hospital clinical hematology laboratories. Application of basic skills learned in student laboratory; instrumentation; and advanced methodologies are included. Radiohematology, bone marrow techniques, and coagulation are also covered. (0-24-8)

MTK 423

Practicum in Immunology. Rotation through the hospital clinical immunology laboratory. Application of basic skills learned in student laboratory; instrumentation; and advanced methodologies are emphasized. (0-16-4)

MTK 424

Practicum in Microbiology. Rotation through the hospital clinical microbiology laboratories. Application of basic skills learned in student laboratory; instrumentation; and advanced methodologies are emphasized. (0-24-8)

MTK 425

Practicum in Immunochemistry. Rotation through the hospital blood bank laboratory. Application of basic skills learned in student laboratory; instrumentation; and advanced methodologies are emphasized. (0-16-4)

MTK 441

Seminar in Medical Technology. Discussion of current topics in medical technology and associated fields. Students present abstracts. (2-0-2)

Microbiology

MIC 311

Diagnostic Bacteriology. Special emphasis is on diagnostic procedures employed in the clinical bacteriology laboratory, such as specimen collection, isolation and identification of medically important bacteria, antibiotic sensitivity testing and determination of serum antibiotic levels. Course includes laboratory exercises associated with these various concepts. Development of proficient skills in these various techniques is stressed. (3-9-5)

MIC 411

Parasitology, Mycology and Virology. This course provides clinical background in mycology, parasitology and virology. Emphasis is on the disease involved and on diagnostic procedures used in the laboratory. The laboratory portion consists of identification, specimen collection, and processing of medically important viruses, fungi, and parasites. Prerequisite: MIC 311. (3-6-5)

MIC 451

Microbiology Concepts. The course is designed to acquaint students with the basic morphological and physiological characteristics of infectious agents. Emphasis is placed on organisms of importance in human disease. General classification of infectious agents, the mechanisms by which these organisms contribute to disease states, and laboratory identifica-

tion are emphasized. Demonstrations and laboratory work accompany the lecture portion of the course. SP (5-1-5). [60 hours.] Schuytema.

MIC 501

Clinical Bacteriology. The experience provides rotation in each section of the diagnostic bacteriology laboratory with emphasis on laboratory identification of pathogenic bacteria and normal flora. Experience is also provided in the techniques applicable to office diagnostic bacteriology. Clinical work is provided by arrangement with the infectious disease section. Specimens from patients on the infectious disease service provide data for learning clinical microbiology. Laboratory projects are available for students wishing to pursue individual interests. Prerequisite: MIC 451. (v-v-v) [4 weeks] Landau.

MIC 521

Molecular Aspects of Eucaryotic Cell Biology and Virology. The following topics comparing eucaryotic cells and viruses will be covered: gene organization, transcription, translation and control mechanism. This course will consist of both lectures and tutorials. Prerequisite: biochemistry, cell biology recommended. Alt. WI. (4-0-4) Massey.

MIC 590

Special Topics. Designed to consider in depth selected contemporary topics in microbiology, such as host-parasite relationships, medical virology, molecular genetics, viral oncology, etc. FA, WI, SP, SU. (v-v-v) Staff.

MIC 599

Independent Study. Specialized course work designed around the particular needs of an individual student. (v-v-v) Staff.

Neurological Sciences

NEU 451

Neurobiology. Neurobiology offers an integrated approach to the central and peripheral nervous system from an anatomic, physiologic and neurochemical standpoint. Using neuroanatomy as a starting point, major systems are developed and discussed in terms of anatomic arrangement, physiologic functioning and related synaptic pharmacology. In all systems clinical lectures highlight the practical applications of basic science concepts in patient evaluation and management. The course is designed to provide basic knowledge in preparation for further study of neuropharmacology and clinical neurology. (6-3-7) [72 hours] Nausieda, W. F. Hughes.

NEU 501

Introduction to Neuroscience. A review of the anatomy and physiology of the nervous system, with particular emphasis given to the structure and function of the brain and cranial nerves. Will include both gross and microscopic structure, and the normal mechanisms of transmission and communication which operate at each level. (3-0-3)

NEU 503

Neuropsychology. A study of the brain mechanisms normally involved in learning, perceptual, language, and emotional behaviors. Typical and atypical development of these functions and how they may be influenced by disease, trauma and aging. Will include attention and memory and the concepts of neural plasticity and recovery of function. (3-0-3)

NEU 521

Neurophysiology I: Sensory System. A study of sensory and sensory integrative processes of the nervous system, the common features and specific attributes to each system as they function to affect perception and adaptive behaviors. Will include phylogeny, ontogeny, anatomy, and physiology of each modality; somatosensory, vestibular, visual, auditory, and the chemical senses of smell and taste. Prerequisite: NEU 501. (3-v-3)

NEU 522

Neurophysiology II: Neurology of Motor Behavior. A study of normal motor behavior and motor mechanisms, the clinical syndromes that typically affect motor behavior and function, and how the neurological examination can identify types of dysfunction. Will include behavioral aspects of syndromes of the parietal and frontal lobes, the corpus callosum, facial and vocal expression, and the apraxias, as well as the mechanisms of motor control and their organization at each level. Prerequisite: NEU 521. (3-v-3)

NEU 601

Core Clerkship in Clinical Neurology. Patients with various neurological disorders are studied. Invasive and noninvasive techniques are observed and practiced. Neuropharmacology, rehabilitation, and specific therapeutic programs are emphasized. Working with both hospitalized and ambulatory patients, the primary emphasis is on enhancing diagnostic abilities in neurological disorders. Prerequisite: MED 601. [4 weeks] Weiner.

NEU 602

Advanced Clinical Neurology. This advanced clerkship is intended to provide students the opportunity to further develop their clinical skills. Students will participate in the outpatient activities of the department and in particular will have ample opportunities to see patients in the movement disorder, epilepsy, muscular dystrophy, and multiple sclerosis clinics. Prerequisite: MED 601, NEU 601. [4-8 weeks] Weiner.

NEU 681

Research in Neurology. Students will participate in ongoing research projects within the department. Current areas of investigation include neuropharmacology, movement disorder, cerebrovascular disease, sleep disorders, epilepsy, neuromuscular disorders, multiple sclerosis, and dementia. Prerequisite: NEU 451 preferred. [4-12 weeks] Weiner.

Nursing

NSG 301

Foundations of Nursing. For the matriculating student, this course introduces the nursing process and provides the necessary beginning for integration of the biological, behavioral and management concepts required to understand contemporary nursing practice. Initial emphasis is on health and wellness, professional nursing behaviors, practices and skills which will enable the student to demonstrate basic nursing performance and prepare for subsequent, more complex concepts included in nursing practice. FA. (4-0-4)

NSG 311

Nursing Application I. The nursing process provides the organizing framework for the students' initial provision of nursing care to selected clients in both simulated and actual health care settings. Emphasis in seminars and field experiences is on integration of the concepts and principles from NSG 301 and on the psychomotor skills of nursing practice. Corequisite: NSG 301. FA. (8 credits—4 credits letter graded, 4 credits P/N).

NSG 312

Nursing Application II. Application of biological science (physiology and pathophysiology) to nursing practice. Nursing principles and rationale for interventions presented are based on physiological principles. Students are assigned to various clinical settings where they put into practice knowledge acquired through lectures and seminars. Corequisite: BIO 301. WI. (8 credits—4 credits letter graded, 4 credits P/N)

NSG 313

Nursing Application III. Continuation of NSG 312. Corequisite: BIO 302. SP. (8 credits—4 credits letter graded, 4 credits P/N)

NSG 323

Heritage of Nursing. Study of the contributions and influences of nursing and nursing leaders with consideration of the social and cultural eras in which they lived. Emphasis is placed on those contributions and influences which advanced nursing and on trends and issues that influence the individual and the nursing profession. (2-0-2)

NSG 324

Parenting. An overview of current thinking and theories surrounding the role of parenting. Needs of the normal parent as well as the parent with a child presenting special problems will be discussed. Contents include units on parenting, developmental issues for parents, parenting in crisis and parenting skills. The role of the nurse in facilitating the accomplishments of parent-child relationships will be explored. Prerequisite: growth and development course. (2-0-2)

NSG 325

Women's Health Care: The Provider's Role. A study of well women's gynecology from puberty to menopause. Following the life continuum in this course, the nursing student will concentrate on many areas of women's gynecological issues, excluding obstet-

rics. Emphasis will be on health maintenance; however, abnormal assessment and follow-up will be included. (4-0-3)

NSG 331

Biochemical and Physiological Aspects of Nutrition. The focus is nutrition and its relation to health.

Concepts explored include biochemical and physiological aspects of nutritive substances, recommended dietary allowances, the basic four food groups, and changing nutritional requirements throughout the life cycle. Offered as the first course in a minicourse sequence offered the same quarter with NSG 332. (1)

NSG 332

Nutritional Management in Disease. The focus is nutrient requirements and modifications in disease. Concepts to be examined include popular dietary regimens, drug and diet interrelationships, nutritional management in selected disease states, and specialized nutritional support techniques. Offered as the second minicourse following NSG 331 during the same quarter. Prerequisite: NSG 331. (1)

NSG 351

Selected Topics in Rehabilitation Nursing. The focus is on providing and enhancing nursing knowledge and skills in preventive and restorative nursing care throughout the adult life cycle. Emphasis will be on recent developments in rehabilitation nursing and on the integration of selected concepts within the nursing process of adult clients with progressive or permanent illness or physical disability. The concepts and skills of physical, emotional and social rehabilitation will be incorporated into the framework of individual, family, health institutions, and community. Prerequisites: NSG 301, 311. (2)

NSG 352

Selected Topics in Rehabilitation—Clinical. Designed to offer the undergraduate nursing student an opportunity to utilize rehabilitation principles within the nursing process with a select group of clients who have a progressive or permanent illness or disability. The student should develop the ability to formulate and implement a nursing care plan that considers alternative methods for helping the client achieve maximum function in the environment. Objectives of the theory portion of the course are to be integrated within the nursing process with this group of clients. Corequisite: NSG 351. (2)

NSG 382

Introduction to Nursing Research. A course designed to provide the knowledge necessary for future practitioners of nursing to read and begin to evaluate contemporary nursing research. Initial focus will trace the evolution of nursing research, considering research activities and future directions. The basic concepts, techniques and methods underlying the research process will be presented. Specifically, topics will include the research process, sampling, data collection techniques, interpretation of results and ethical considerations. (3-0-2)

NSG 390

Selected Topics in Nursing. An elective course designed for the registered nurse student to ease the role transition from nurse to student. Content and clinical focuses on concepts and techniques that will assist the student to enhance his/her professional development. The course and the clinical component are prerequisites for clinical advanced placement. Prerequisites: NSG 301 and 311 by course work or advanced placement examination. (2-3-3)

NSG 401

Patient Care Management. Content focuses on leadership and management concepts appropriate for the first-level manager. Emphasis will be on various health care systems from micro to macro levels and their influence on and interactions with the professional nurse. Prerequisites: BHV 403, NSG 412, PHR 304. SP. (4-0-4)

NSG 411

Nursing Application IV. Selected behavioral concepts related to nursing practice are developed independently and then integrated with the stages of the life cycle. The concepts are communication, the teaching-learning process, behavioral stress and adaptation, and family systems. Corequisite: BHV 402. FA. (9 credits—4 credits letter graded, 5 credits P/N)

NSG 412

Nursing Application V. Application of behavioral science to nursing practice. Using principles of therapeutic interaction and several behavioral perspectives as a base, students enhance their ability to understand patients' feelings and behavior and make systematic, deliberate use of the nursing process with individuals, families and groups to accomplish behavioral goals. Opportunity is provided for students to increase sensitivity to their own and others' communication. Corequisite: BHV 403. WI. (9 credits—4 credits letter graded, 5 credits P/N).

NSG 413

Nursing Application VI. Students learn to use various leadership and management principles in experiences related to group behavior in the context of organizations. These experiences include exploration of a variety of political, social and economic problems and issues. The major theme is the interaction of multiple systems with health and illness. Prerequisite: NSG 412. SP. (10 credits—2 credits letter graded, 8 credits P/N)

NSG 424

Basic Cardiac Arrhythmias. Designed to help the student recognize and describe common disorders of cardiac rhythm, underlying hemodynamic mechanisms and nursing implications. It will be taught via a self-paced, mastery learning mode with lectures and other activities supplemental to the basic individualized learning process. Course material will be divided into ten units and grades will be determined by the number of units completed. Fourth-year standing required. (2-0-2)

NSG 425

Cardiovascular Nursing. An in-depth study of scientific concepts in relation to cardiovascular nursing practice. Content includes the integration of previous nursing concepts from behavioral and biological sciences and health systems courses as well as new theories, techniques and research in the area of cardiovascular nursing, Seniors only. (2-0-2)

NSG 426

Oncology Nursing. The theoretical component of oncology nursing is presented to enhance the student's understanding and awareness of cancer as an aberrant cellular disease, manifested as a chronic illness. Several major manifestations have been identified in reference to the cancer/host relationship, and they will be developed in terms of body systems and changes occurring in those systems. They are crises and chronicity, dissemination of disease, alteration in structure and function of the cell, obstruction of lumens, infiltration and invasion, pressure on structure, and distortion of tissue. (3-0-3)

NSG 427

Nursing Implications of Diagnostic Procedures. Major diagnostic tests for each body system will be discussed. Emphasis will be placed on patient problems and needs and appropriate nursing intervention; for example, patient preparation, patient education, and specific interventions both pre- and post-test. In addition, rationale for its use, the significance of its results, its effects, and the cost to patients will be discussed for each test. Format will include lecture, observational experience and discussion. Fourth-year students have priority. (2-0-2)

NSG 433

The Nursing Process in Health Education. Health education is a process used by nurses in all relationships with clients and families. Students will learn the components of the teaching-learning process and apply these to clients. The four parts of the teaching-learning process (assessment of learner need and readiness, planning a teaching strategy, implementation, and evaluation) will be the structure of the course. Clinical experiences will provide opportunity to practice and learn each of these components. (2-1-3).

NSG 437

Concepts Central to Surgical Nursing. An in-depth study of scientific concepts in relation to surgical nursing practice. Content includes the integration of previous nursing concepts from behavioral and biological sciences, as well as new theories and concepts in the area of surgical nursing. Prerequisites: NSG 301, BIO 302. (2-0-2)

NSG 441

Independent Clinical Study. Intensive independent study in a clinical area of nursing. (v)

NSG 449

Independent Study. Student contracts with nursing faculty for independent academic study in an area of nursing. (v)

NSG 461

Intraoperative Nursing. The main focus will be on the nurse's role during the intraoperative phase of the surgical patient's treatment. It will include instruction and practice in the technical functions of instrument and circulating personnel as well as the principles upon which these functions are based. The significance of the preoperative role will also be examined. (4)

NSG 471

Introduction to Radiation Therapy. Lectures will be presented emphasizing the nursing role with the radiotherapy patient. Other topics that will be discussed include radiobiology, radiation safety, and the rationale and methods for radiation treatment. There will be one visit to a radiotherapy department. (2-0-2)

NSG 473

Neurological Aspects of Patient Care. The physiological factors underlying pain, consciousness and sleep are discussed, as well as the signs and symptoms of common neurological disorders. The material is presented by means of lectures, demonstrations and visual aids. Corequisite: ANA 462. (2-0-2)

NSG 501

The Use of Concepts, Theories and Models in Nursing Practice. Emphasis of this seminar course is on the use of models in nursing, their theoretical base and the operation of models in nursing practice. (2-0-2)

NSG 503

Physical Assessment. This course presents methods for obtaining and recording a complete data base of the patient's history; use of problem-oriented records; physical, emotional and developmental assessment; and the use and interpretation of diagnostic instruments and procedures. (3-3-4)

NSG 524

Parenting. Same as NSG 324 except that graduate students have an additional seminar and submit an in-depth research paper. (2-2-3)

NSG 525

Advanced Concepts in Cardiovascular Nursing. Recent advances in cardiovascular nursing and cardiology are presented as they apply to patients in an acute care setting. Emphasis is on hemodynamic and electrophysiologic aberrations and the nursing implications thereof. Student-led seminars complement lecture topics and provide for individualized areas of concentration. (3-0-3)

NSG 526

Oncology Nursing. Same as NSG 426 with additional work required for graduate credit. (3-0-3)

NSG 527

Current Topics in Respiratory Management. A lecture and seminar format for the presentation and discussion of current concepts in respiratory manage-

ment. Topics addressed in this course may vary depending on current trends in clinical practice but will generally include the areas of oxygenation, mechanical ventilation, ARDS syndromes, anesthesia and nutrition. Each week a new topic will be addressed by faculty or student presenters. Further exploration of the topics through discussion of related research and clinical application is done in seminars. Prerequisite: working knowledge of respiratory physiology, PHY 452 or equivalent, instructor permission. FA, WI, SP, SU. (2) Podjasek, Fraulini.

NSG 528

Nephrology Nursing. Using principles from the biological and behavioral sciences, this course provides the participant with an in-depth study of renal anatomy, physiology, and pathophysiology as it relates to nursing care. Current research findings are emphasized in analyzing the various forms of treatment for renal disease. The extended role of the nurse in related settings is explored. (2-0-2)

NSG 532

Perspectives in Trauma Nursing. Trauma is examined as a health care problem with implications for nurses in every setting. This course presents an introduction to the scope and challenge of providing nursing care to the client with multiple injuries. A systematic approach to concepts of trauma nursing is presented in lecture content. Student-led seminars promote integration of biological and psychosocial theory through the discussion of specific issues. (3-0-3)

NSG 534

Perspectives on Current Issues in Nursing. Through small group discussions and assignments, students will study selected current issues and their relationships to nursing. (2-0-2)

NSG 541

Nursing Consultation. This is a combined lecture-seminar course with a sharp focus on the theory of nursing consultation. The following topics will be considered: theoretical development of consultation; establishing a consultative relationship; steps in the consultative process; and consultation in a multidisciplinary setting. Seminar activities will include discussion and application of consultative principles in case study situations with opportunities to practice these skills in the clinical setting. (3-0-3)

NSG 543

The Clinical Nurse Specialist. The role of the clinical nurse specialist is explored as it now exists in a variety of settings. Emphasis is on understanding the components of the role and how one begins to practice them. Topics include analysis of the system in which the clinical nurse specialist functions, job descriptions, understanding oneself, entry into the system and coping in the role. (3-0-3)

NSG 544

Clinical Assessment for Nursing Practice. This course focuses on health status evaluation of patients as practiced by the clinical nurse specialist. The content includes: identification and practice of specific

data collection mechanisms and techniques; relating data collection to patient's psychosocial and biophysiology development; assessing patient status through inspection; palpation and auscultation. Attendance required at all lectures. Use of psychomotor skills laboratory expected. Prerequisite: graduate level physiology. (4-1-4)

NSG 561

Leadership in Nursing. Analysis of present status of nursing leadership in education and service. Emphasis is on leadership as a societal process involving concepts and theories applied to the nursing profession. Exploration of research findings on leadership, styles of leadership, and leader-follower relationships. Discussion will also focus on preparation for leadership roles and predictions for the future of nursing leadership. (2-0-2)

NSG 588

Directed Research. Independent research experience to test theory and/or gather data under the guidance of a professor of nursing. (v)

NSG 591

Independent Clinical Study. Intensive independent study in a clinical area of nursing. Prerequisite: HCE 583. (2-5 credits)

NSG 598

Master's Thesis. Students who elect to write a master's thesis contract with their major advisor and the associate dean. Requires design of project, data collection, analysis, written presentation and satisfactory oral defense of project. Minimum enrollment: three quarter hours each quarter. (v)

NSG 599

Independent Study. Student contracts with nursing faculty for independent academic study in area of nursing. (2-5 credits)

NSG 601

Theory Development. Exploration of theory construction through the study of the philosophy of science. The science of inquiry is pursued through library study and seminars. Course extends over two quarters. (4)

NSG 641

Developing Leadership Style. Identification and analysis of the current status of nursing. Emphasis is on the development of knowledge and ability in leadership styles for the advancement of the nursing profession—particularly in nursing practice. (2-0-2)

NSG 671

Research Design and Methods I. The first in a two-course research sequence. Focus is on analysis of selected research studies. Attention is given to the evaluation of the appropriateness of the research question, theoretical framework, variables measured, sampling strategy, design, methods, and statistical techniques. Special emphasis is placed on the understanding and application of the concepts of reliability and validity. Prerequisites: HCE 584 or equivalent, PVM 531 or equivalent; NSG 601 is recommended. (3)

NSG 672

Research Design and Methods II. An in-depth analysis of research approaches including historical, descriptive, correlational, quasi-experimental, and experimental. Consideration will also be given to the process of developing a research proposal and conducting a research protocol according to ethical standards. Prerequisite: NSG 671. (3)

NSG 684

Selected Topics in Research. May be taken more than once. (v)

NSG 688

Directed Research. Independent research experience to test theory and/or gather data under the guidance of a professor of nursing. (v)

NSG 689

Research Grantsmanship. This course provides the knowledge base and skills essential to the process of development and submission of a research grant application. A secondary focus relates to the implementation and administration of a funded project. Select topics will be presented by a variety of seasoned investigators with funding histories. Prerequisite: NSG 672. (1)

NSG 691

Directed Clinical Nursing. At least 20 quarter hours of individually designed courses of independent study are planned conjointly by the doctoral student and the academic advisor. (v)

NSG 696

Clinical Seminar—Application of Doctoral Education in Nursing in Clinical Practice. Students and faculty critically analyze the components of a variety of issues related to clinical practice in nursing at the doctoral level. The theories underlying the issues and proposed approaches will serve as the basis for discussion, analysis and debate. The specific issues may vary related to student interest/need but will exemplify the broad areas of: definition of doctoral level nursing practice; collaboration and collegiality; and professional behaviors. Prerequisite: statistics and research sequence at least half complete and within one term of taking NSG 691. (2)

NSG 699

Dissertation Research. Individual guidance of independent research. Doctoral candidate must be enrolled for at least three quarter hours each quarter until dissertation colloquium has been presented. (v)

Nursing-Anesthesia

NAN 511

Anesthesia Nursing Concepts Seminar and Practicum I. Principles basic to the practice of anesthesia will be investigated. Practice in the clinical area includes pre-anesthetic evaluation of the patient, physical assessment of the patient and evaluation of the chart. Intravenous techniques, the anesthesia machine and monitoring of the patient will be discussed. Prerequisite: NAN 521. (4)

NAN 512

Anesthesia Nursing Concepts Seminar and Practicum II. Anatomy, physiology and pathophysiology in relation to anesthesia are investigated. Practice in the clinical area of anesthesia includes total patient care by the nurse anesthetist or student in a clinical setting under the direct supervision of a CRNA and M.D. anesthesiologist. Prerequisite: NAN 511. (3-12-6)

NAN 513

Anesthesia Nursing Seminar. Discussion of the clinical specialty areas. Integration of concepts from principles of anesthesia into specialty areas of pediatrics and obstetrics. Prerequisite: NAN 512. Corequisite: NAN 595. (6-0-3)

NAN 521

Chemistry and Physics in Anesthesia I. An introduction to chemistry and physics in anesthesia. Major emphasis is on the principles of organic chemistry. (3-0-3)

NAN 522

Chemistry and Physics in Anesthesia II. Continuation of NAN 521. This course focuses on physics in relation to anesthesia practice. (3-0-3)

NAN 531

Basic Pharmacology in Anesthesia. An introduction to pharmacokinetics and its application to clinical anesthesia. This course also includes a brief introduction to the anesthetic agents and drugs used in the operating room. (2-0-2)

NAN 541

Pharmacology in Anesthesia. Pharmacology in relation to anesthesia including pharmacology of specific drugs, clinical application and drug interactions. Prerequisite: NAN 531. (7-0-6)

NAN 595

Practicum in Anesthesia. Experience in clinical anesthesia with supervision by a CRNA and/or M.D. anesthesiologist. Corequisite: NAN 513. (0-21-7)

NAN 600

Residency in Anesthesia Nursing. A 52-week, 4-quarter residency following completion of the anesthesia nursing curriculum. The student will be working with a preceptor in the clinical area. The clinical practice will be a continuation of rotations through the specialty areas. Clinical practice will also include experience in respiratory therapy, anesthesia for electroshock therapy, anesthetic care of intensive care patients, postanesthesia recovery room experience, and a CPR course. This clinical residency will provide the opportunity for the student to become clinically proficient in the practice of anesthesia. Journal clubs and conferences will be included. Required anesthesia call experience is provided at this time. No academic credits given.

Nursing-Community Health

NCH 511

Community Health Nursing Concepts and Issues Seminar. An initial seminar in community health nursing wherein the focus will be an introduction to current issues, concepts, and problems relative to professional practice. Through discussion, the scope of community health nursing at the master's practitioner level will be explored. Topics include: introduction to community assessment; environmental services; levels of health care; aggregate identification, assessment and care planning; investigation of social, biological, economic and legislative factors affecting health; and barriers affecting illness prevention, delivery of care, planned change and professional practice. (3-0-3)

NCH 512, 513

Adult Health Concepts Seminar and Practicum I, II. Integration of the concepts of NSG 503, pathophysiology and management of health and specific chronic diseases and acute and emergency conditions in adults. Includes genetics, health maintenance appraisal and counseling, emotional components of illness, pathophysiology, assessment and management of disorders of specific acute and chronic illnesses, emergency medicine and disaster planning. Each course includes nine hours each week in appropriate clinical practice. Prerequisite: NSG 503. (6) (6)

NCH 514

Ob/Gyn Health Concepts Seminar and Practicum. Integration of concepts from NCH 511, 512, and 513. Physiology of the reproductive system, labor and delivery; pathophysiology of complications of prenatal, labor, delivery, and specific gynecological conditions; assessment and management of obstetrical and gynecological conditions. Includes counseling, teaching and management of family planning techniques. Prerequisites: NSG 501, 503. (6)

NCH 515

Pediatric Health Concepts Seminar and Practicum. The growth and development of children and the pathophysiology, assessment, and management of health and specific acute pediatric illnesses. Includes the study of common pediatric problems including allergies, immunizations, poisoning, skin disorders, and communicable diseases. Prerequisite: NSG 503. (6)

NCH 522

Community Assessment I. Assessment and diagnosis of the dynamic components of a specific community. The first four weeks will be lecture and seminar allowing field experiences for the final six weeks. Prerequisite: NCH 511 recommended. (4-0-4)

NCH 523

Community Assessment II. The analysis and validation of community diagnosis and the development of a nursing intervention proposal to address prioritized community problems within the health spectrum. Seminar. Prerequisite: NCH 522. (4-0-4)

NCH 533

Pediatric Screening Measures. Physical, cognitive and psychosocial development from infancy through adolescence is the basis for developmental assessment through screening. A variety of screening tools will be demonstrated and used by the student in simulated or actual clinical settings. (3-0-3)

NCH 543

Developmental Issues Influencing the Health of Women. An exploration of how women's psychosocial development needs are reflected in the health status of the contemporary U.S. woman, and how the health delivery system interfaces with these developmental needs and with the health status of women. Speakers and films will provide topics for seminar discussions. (2-0-2)

NCH 544

Epidemiology. Principles and methods of epidemiologic investigation of infectious and noninfectious diseases. The distribution and dynamic behavior of disease in the population. Etiologic factors, modes of transmission, and pathogenesis of disease. Laboratory work includes methods of collecting and analyzing field observations. (2-3-3)

NCH 561

Issues in Community Health Nursing: Role of the Nurse Practitioner. A seminar dealing with clinical and professional problems and issues relative to the role of the community nurse practitioner. Topics include historical and conceptual basis for epigenesis of the nurse practitioner role, dimensions of preparation and practice, medical/legal aspects of expanded roles in nursing, issues and implications regarding nurse-physician and nurse-physician assistant relationships, socialization process and nurse practitioner impact studies. (2-0-2)

NCH 571

Biostatistics. Collection, tabulation and elementary analysis of data including vital statistics, treatment of rates, distribution of variety and sampling variations. Study includes probability, permutations and combinations, histograms, measures of location and dispersion, life tables, normal distributions, sampling distributions of norm and variance, normal approximation for dichotomous populations, point and interval estimation for norm and variance influence for two samples, and paired observations. Prerequisite: Undergraduate statistics course. (3-0-3)

NCH 600

Residency in Community Nursing. A two-quarter residency following all required courses. During this time, the student must function in a setting which allows for the integration of clinical assessment, management, nursing, and community organization skills, and provides opportunities to increase proficiency and efficiency. The setting will be chosen, and negotiations regarding practice will be carried out by the student with assistance and approval from the faculty. The student may choose to spend time in one or more interest tracts within the setting. The setting will be asked to provide the student with a pri-

mary preceptor. Rush will maintain supervisory contact through communication with the student's preceptor, patient encounter forms, chart audits, and periodic evaluation reports from preceptors. It is anticipated that the students will receive some income from the agency or institution sponsoring the residency. Students are required to register each quarter of the residency and pay for health insurance coverage and student activity fee, if assessed. No academic credits.

Nursing-Gerontological**NGR 511**

Gerontological Nursing Concepts Seminar and Practicum I. The seminar is an introduction to concepts important for the gerontological nurse clinical specialist. The focus of discussion is the active older adult in the community as well as related theories, clinical approaches, and research findings. Concepts included are: gerontological nursing as a specialty, communication with the older adult, health and wellness, the aging process, environmental assessment, and chronicity. Clinical practicum is done in noninstitutional settings with a well client of the student's own choosing. Prerequisite: NSG 501. (4)

NGR 512

Gerontological Nursing Concepts Seminar and Practicum II. The seminar focuses on common health problems of older persons as well as on concepts such as pain, sensory deprivation/overload, and immobility. Emphasis is placed on the nursing components of prevention, health maintenance and restorative measures. The practicum includes experience with patients/clients to prepare for practice as a clinical specialist in gerontological nursing. Students may select field experiences in a variety of settings available in primary, secondary, or tertiary care centers. (v-v-7)

NGR 513

Gerontological Nursing Concepts Seminar and Practicum III. Continuation of NGR 512. Includes completion of clinical project. (v-v-7)

NGR 514

Gerontological Nurse Practitioner Concepts. The seminar focuses on organizational, economic, legal, and behavioral factors influencing implementation of the gerontological nurse practitioner role. Through individual presentations, students are able to explore current practice issues pertinent to role adaptation. The impact of leadership and collaborative relationships necessary for role synthesis are presented. Prerequisite: NGR 513. (3-0-2)

NGR 515

Gerontological Nurse Practitioner Practicum. The practicum experience emphasizes the development of expertise in the primary care role. Students are provided with opportunities to practice the gerontological nurse practitioner role within a

variety of settings. Formulation, implementation and evaluation of management strategies, in collaboration with a preceptor, facilitates further definition and refinement of the practice parameters within an interdisciplinary framework. Faculty consultation is provided to fulfill students' objectives. Prerequisite: NGR 513. (v-v-1)

NGR 522

Physiological Aspects of Drugs in the Elderly. Physiological aspects of drug absorption, distribution, metabolism, and excretion, with special reference to the aging adult. Factors involved in assessment of drug-related health problems are identified. Characteristic uses and misuses of drugs are discussed in relation to health care and education of the elderly. (2-0-2)

NGR 523

Physiological Aspects of Nutrition in the Elderly. Physiological aspects of food absorption, distribution, metabolism and excretion relevant to the aging adult. The nutrient intake of the elderly is examined in light of their nutritional requirements. Changing requirements for carbohydrates, proteins, fats, vitamins, and minerals are discussed along with nutrition-related diseases of old age. Prerequisite: ANA 462 or PHY 451 or permission of course director. (2-0-2)

NGR 589

Geriatric/Gerontological Internship. Designed to allow the student to gain maximum experience in providing expert nursing care for aging adults. The student is given line responsibility and accountability for his/her case load and is under close supervision of experienced practitioners in the field. The course provides the student an opportunity to explore, in the "real world," strategies for sound health care developed in the preceding course work. (12)

NGR 591

Independent Clinical Study. Intensive independent study in geriatric nursing. (v)

Nursing-Medical/Surgical

NMS 511

Medical/Surgical Nursing Concepts Seminar and Practicum I. Seminar and practicum in medical/surgical nursing and the subspecialties such as oncological and cardiovascular diseases. Seminar focuses on nursing problems with discussion of relevant theories, clinical approaches and research findings. The practicum includes study and observation of the role of the clinical specialist, and experience with patients to prepare for practice as a clinical specialist in the particular specialty area. Students may select field experiences in settings available within the Rush network in primary, secondary, or tertiary care centers. Clinical experience may focus on different age groups. Prerequisite: NSG 501. (v-v-4)

NMS 512

Medical/Surgical Nursing Concepts Seminar and Practicum II. Continuation of content covered in NMS 511. (v-v-7)

NMS 513

Medical/Surgical Nursing Concepts Seminar and Practicum III. Continuation of NMS 512. Includes completion of a clinical project. (v-v-7)

Nursing-Midwifery

NMW 501

Health Care of Women and Neonatal Assessment. Introduction to the theoretical framework for and basic skills used in the practice of nurse-midwifery. Clinical experiences and seminar discussions are designed to assist students in becoming proficient with taking histories and performing physical examinations, including accurate interpretation of the findings, for neonates and for women in different life phases. Emphasis is placed on varying cross-cultural practices and needs of women as they impact health status during pregnancy, postpartally, prior to conception or interconceptionally, and after menopause. (4)

NMW 511

Low Risk Management. The major focus of this course is on preventive health care for low risk women and newborns. Clinical experiences and course content include counseling and scientifically based management regimens as applied to normal pregnancy, birth, postpartum, newborn, and gynecologic care. The changing role of the Certified Nurse-Midwife, in relation to consumerism, childbirth practices, and an evolving legislative environment, are explored in terms of their impact on role identification and professional responsibility. Prerequisites: NMW 501, NSG 503. Corequisite: BIO 531. (7)

NMW 512

Moderate Risk Management. Nurse-midwifery practice embraces the concepts of health maintenance and anticipatory guidance throughout the reproductive years. An integral part of health maintenance is the early recognition of health-related problems or potential problems. This course focuses on utilization of the nurse-midwifery process in the management of maternal and neonatal problems which place the family at moderate risk. Topics, therefore, address issues surrounding fetal/neonatal/maternal well-being and commonly occurring complications in the antepartal, intrapartal, and postpartal phases of the reproductive cycle. Appropriate use of medical consultation and the provision of emergency services are explored as an integral part of nurse-midwifery practice. Prerequisite: NMW 511. Corequisite: BIO 532. (7)

NMW 513

Advanced Management. The course focuses on recognition and differentiation of real or potential complications surrounding the reproductive couple

and neonate with emphasis on anticipatory guidance and management. Nurse-midwifery practice modifications in a variety of settings as women or neonates become high risk are explored, as the alterations in the role of the physician vs. the nurse-midwife for management of patient care. Prerequisite: NMW 512. (7)

NMW 561

Contemporary Issues in Nurse-Midwifery. An exploration of several contemporary issues, including their historical development, which impact the practice of nurse-midwifery and the professional role of nurse-midwives as nurses and as members of a health care team. Prerequisite: NMW 511. (2)

Nursing-Oncology

NOC 511

Oncology Nursing Concepts Seminar and Practicum I. Seminar focuses on oncology nursing problems with discussion of relevant theories, clinical approaches and research findings. The practicum includes study and observation of the role of the clinical specialist, and experience with patients to prepare for practice as a clinical specialist in oncology nursing. Students may select field experiences in settings available within the Rush network, in primary, secondary, or tertiary care centers. Clinical experiences may focus on different age groups. Prerequisite: NSG 501, PPH 522. (4-0-4)

NOC 512

Oncology Nursing Concepts Seminar and Practicum II. Continuation of NOC 511. (7-0-7)

NOC 513

Oncology Nursing Concepts Seminar and Practicum III. Continuation of NOC 512. Includes completion of a clinical project. (7)

Nursing-Parent/Child Health

NPC 421

Perinatal Nursing. This course is designed to allow the student an opportunity to explore in depth various aspects and issues of current perinatal nursing practice. The course content will be based on concepts drawn from biological, sociological, and psychological sciences. The application of these concepts to the family throughout the childbearing cycle in both normal and high risk situations will be stressed. (3-0-3)

NPC 461

Orthopedic Problems in Childhood. This course offers the student who has general medical, surgical, and pediatric experience an in-depth study of childhood musculoskeletal growth, development and disruptions. Assessment, diagnosis, treatment and multidisciplinary management of problems will be studied. Psychosocial implications which are special to the child and his/her family will be explored. (3-0-3)

NPC 503

Parent/Child Assessment. This course is designed to communicate new nursing child assessment techniques and tools which will prepare nurses to adapt and utilize new information into their health care practice. In child health assessment the ultimate goal is to anticipate problems before they develop, and intervene at that point. (2-1-3)

NPC 511

Parent/Child Health Nursing Concepts Seminar and Practicum I. Seminars focus upon nursing problems of families in health and illness with discussion of concepts, relevant theories, clinical management strategies, and research findings. The practicum includes clinical application in obstetrical or pediatric nursing and development of a clinical specialist's role in a selected area of clinical practice. Prerequisite: NSG 501. (v-v-4)

NPC 512

Parent/Child Health Concepts Seminar and Practicum II. Seminars focus on the theoretical bases for nursing interventions with families at risk who are experiencing physiological and/or psychological problems. The seminars will also focus on major concepts impacting families, and the theorists and researchers in these areas. These concepts will be applied in the practicum which will include further specialization and synthesis in selected areas of obstetrical and/or pediatric nursing management of families at risk. (v-v-7)

NPC 513

Parent/Child Health Concepts Seminar and Practicum III. Seminars focus upon nursing problems of growing families in health and illness, with discussion of physiological, psychological, and psychosocial research findings and clinical management strategies. Seminars also focus upon the application of the theory relevant to the role of a clinical specialist in parent/child health nursing. The practicum includes specialization in selected areas of obstetrical and/or pediatric nursing including continuity of care in nursing management for selected families. (v-v-7)

NPC 521

Normal and Pathological Parent-Infant Interaction. The first third of the course will focus upon normal infant development (birth to three years old) and parent-infant interaction. The latter part of the course will look at abnormal responses between infants and parents and early intervention. Includes discussion of assessment, options and rationale for intervention. (2-0-2)

NPC 533

Pathophysiology of the Fetus and Neonate. Lecture and seminar focusing on the pathophysiology of the fetus and neonate including detailed pathophysiology, aspects of biophysical principles and biochemistry and theoretical aspects of intervention. Prerequisite: PHY 452. (4-0-4)

NPC 621

Seminar on Parent-Infant Interaction. Advanced seminar on theory and research related to parent-infant interaction. Prerequisite: 18 quarter hours of course work in child development and/or parent/child nursing; NSG 601, 683. (3-0-3)

Nursing-Psychiatric

NPS 511

Psychiatric Nursing Concepts Seminar and Practicum I. The seminar focuses upon systems theory and systems approaches in health care settings and in families. Also included are crisis theory and interventions as well as principles of interviewing in client assessment and treatment situations. The practicum, which for each student takes place in one setting for three quarters, includes systems entry and analysis experiences along with the development of beginning relationships with clients, as students learn the nurse clinical specialist role. Clinical placements are made in primary, secondary, and tertiary care settings both inside and outside of the Rush network. These placements provide the settings to work with client populations and age groups of interest and educational relevance for students. Prerequisites: BHV 501, NSG 501, ANA 462. (4-12-7)

NPS 512

Psychiatric Mental Health Nursing Seminar and Practicum II. Seminars focus on psychotherapy with families and groups as well as on special psychotherapeutic interventions associated with developmental issues. The practicum continues in the same setting as NPS 511. Prerequisite: NPS 511. (4-15-7)

NPS 513

Psychiatric Mental Health Nursing Seminar and Practicum III. The nurse clinical specialist role is further developed and consolidated in a supervised practicum with individuals, families and groups in the same setting as NPS 512. Seminars address issues in therapeutic intervention arising from neuropsychopathology. Prerequisite: NPS 512. (4-15-7)

NPS 521

Comparative Theoretical Models in Psychiatric Nursing. This elective course combines lectures and a clinical practicum in psychiatric nursing. Using the knowledge base developed in NSG 501, detailed study of Peplau's interpersonal model, Travelbee's process model and one broad-based model will be made. Prerequisite: NSG 501. (1-3-2)

Nursing-Rehabilitation

NRH 511

Rehabilitation Nursing Concepts Seminar and Practicum I. An introduction to the broad scope of rehabilitation nursing. The practicum emphasizes the role of the clinical specialist as a practitioner and

includes application of nursing techniques which direct patients toward optimal independence in activities of daily living. (3)

NRH 512

Rehabilitation Nursing Concepts Seminar and Practicum II. The seminar focuses on the nursing management of the chronically ill and physically disabled adult. The practicum emphasizes the role of the clinical specialist as a teacher while continuing to develop skill as a practitioner. The consultant component of the clinical specialist role is introduced as it applies to patient and family situations. (6)

NRH 513

Rehabilitation Nursing Concepts Seminar and Practicum III. The seminar focuses on research, and theories and models of practice as applied in a variety of rehabilitation settings. The practicum focuses on nursing research, patient care evaluation and their application to clinical practice. The consultant role is expanded to include consultation with nursing staff about patient care problems. (7)

NRH 514

Rehabilitation Nursing Concepts Seminar and Practicum IV. The seminar focuses on theories and processes of change, leadership and management. The practicum provides opportunities for students to synthesize their understanding of the role of the rehabilitation clinical specialist and to develop a framework for practice. Emphasis is placed on clinical practice, teaching, research, management and consultation as components of the clinical specialist's role. (7)

Nutrition

NTR 503

Dietetics I. The student will develop an understanding of the purpose and organization of the food service department in a hospital setting by describing the functions of each subsystem and its relationship to the entire food service system, and by explaining departmental interrelationships and responsibilities. Limited to clinical nutrition students in Track I. FA. (3-0-3)

NTR 504

Dietetics II. The student will learn how to apply management skills to a food service operation using practical experience and original research. Limited to clinical nutrition students in Track I. Prerequisites: NTR 503, HSM 574. WI. (3-0-3)

NTR 505, 506

Dietetics III, IV. The student will prepare and document a nutrition care plan for a client by: (1) assessing nutrition needs utilizing anthropometric, biochemical and physical measurements and appropriate data collected from medical, social and dietary histories; (2) writing short- and long-term nutrition care goals and objectives which are consistent with total health care planning and which identify evaluation tools

and techniques; (3) developing a plan of action to accomplish objectives that is feasible in terms of available resources and that is appropriate in terms of client capabilities, motivation and life-style; and (4) demonstrating correct procedure for documenting nutrition care given. Special emphasis will be placed on meeting dietary needs at different periods during the life span and during disease or stress conditions. Limited to clinical nutrition students in Track I. 505 SP (3-0-3), 506 SU (3-0-3)

NTR 510

Current Professional Issues. The student will participate in discussions intended to examine professional issues in the field of dietetics that are of current interest and concern. Limited to clinical nutrition students. FA. (3-0-3)

NTR 511, 512, 513, 514, 515

Practicum I, II, III, IV, V. The student will plan, organize, direct and evaluate nutrition care for individuals and groups of varying age and life-styles, in sickness and in health. In the clinical units of a hospital, the student will function as a member of the health care team by: (1) assessing nutrition needs of clients and developing care plans consistent with total health care planning; (2) implementing care plans which will involve processes of management of available resources and of counseling; and (3) monitoring short-term outcomes of dietary intervention and evaluating efficacy of nutrition care plan. In the food service units of a hospital, the student will function as a member of the management team by: (1) analyzing menus according to established criteria; (2) identifying, developing and monitoring cost and quality control procedures applicable to food service subsystems of procurement, production and distribution; (3) maintaining sanitation and safety standards; (4) applying principles and practices of personnel management in the procurement and direction of the work force; and (5) identifying and maintaining appropriate records for fiscal management. With practical experience of increasing complexity, the student will be expected to develop competence at the beginning practitioner level in both food service management and clinical dietetics. Limited to clinical nutrition students in Track I. 511 FA (0-24-3), 512 WI (0-24-3), 513 SP (0-24-3), 514 SU (0-24-3), 515 FA (0-v-2)

NTR 521

Human Metabolism I. Lectures describe the synthesis of nucleic acids from purines and pyrimidines assimilated from the diet, synthesized *de novo*, and recycled via salvage pathways. The role of nucleic acids and subcellular organelles involved in protein synthesis will conclude the course. Limited to clinical nutrition students or permission of instructor. FA. (4-0-4)

NTR 522

Human Metabolism II. Lectures describe the biochemical pathways that the human body uses to produce energy from foodstuffs or endogenous fat, proteins and glycogen. The regulation of metabolism and the interaction of pathways is stressed. Limited to clinical nutrition students or permission of instructor. Prerequisite: NTR 521. WI. (4-0-4)

NTR 524

Advanced Mineral and Vitamin Metabolism. Lectures and readings will describe current consensus on the functional aspects of these micronutrients in man and will critically survey methodologies available for the determination of nutrition status. Limited to clinical nutrition students or permission of instructor. Prerequisite: NTR 522. (3-0-3)

NTR 527

Advanced Protein Metabolism. Lectures and readings will review mammalian protein metabolism in liver, muscle, intestine and brain and will emphasize metabolic changes in response to various diets, infection and certain disease states. Lectures will also describe methods currently employed for estimating the protein requirements of healthy individuals and will explore changes in these requirements for patients with infection, trauma or disease. Limited to clinical nutrition students or permission of instructor. Prerequisite: NTR 522. (3-0-3)

NTR 528

Advanced Carbohydrate and Lipid Metabolism. Lectures and readings in this course will emphasize the regulation of carbohydrate and lipid metabolism in liver, muscle, kidney, brain and adipose tissue by describing changes in metabolic flux wrought by diet composition and starvation. Limited to clinical nutrition students or permission of instructor. Prerequisite: NTR 522. (4-0-4)

NTR 541, 542

Interrelationships of Nutrition and Disease I, II. The student will describe the pathophysiology, diagnosis, and treatment of those disorders that adversely affect human nutrition. Special emphasis will be placed on analysis of current theories. Limited to clinical nutrition students. Prerequisite: NTR 522. 541 SP (4-0-4), 542 SU (4-0-4)

NTR 551

Nutrition in Human Development I. In the context of four chronological stages of human growth and development, the student will survey growth patterns and physiologic, neuromuscular, cognitive and psychosocial development as they impact nutrition requirements and risks. The emphasis will be on nutrition topics and issues characteristic of each developmental period: prenatal, infancy (birth to one year), toddler and preschool (one to five years), and school age and adolescence. Prerequisites: NTR 541, 542. FA. (4-0-4)

NTR 552

Nutrition in Human Development II. In the context of three chronological stages of human growth and development in adults, the student will survey biophysical and psychosocial changes as well as changing energy and nutrient requirements. The emphasis will be on nutrition topics and issues characteristic of each developmental period: young adulthood (20 to 35 years), middle adult years (35 to 65 years), and late adulthood (65 years and older). Prerequisite: NTR 551. WI. (4-0-4)

NTR 571

Management in Clinical Dietetics. The student will explain the following concepts in terms of their application to and interrelationship with the management of a clinical dietetic area: strategic planning, financial considerations and budget control, personnel policy implementation, management decision making process, and professional behavior within the organization. Limited to clinical nutrition students. Prerequisite: HSM 574. SU. (3-0-3)

NTR 581

Techniques for Nutrition Research. The lecture portion of this course presents sufficient basic information to enable the student to perform proximate analysis of food samples during laboratory periods. Students will also purify a crude enzyme preparation by using elementary purification methods demonstrated during lecture. Permission of instructor. (2-1-3)

NTR 585

Applied Research Problem. Under the supervision of a faculty member, the student will conduct a modest research project in clinical nutrition or dietetics and prepare a written research report which includes the following components: statement of the problem, review of the literature, research design procedures, findings, discussion and conclusions. The student is encouraged to complete the study designed in HCE 581, or some modification of it. The research project must be approved by the course director and preceptor at least six weeks prior to the beginning of the quarter in which the study is to be conducted. Limited to clinical nutrition students. Prerequisite: HCE 581. (v-0-4 or 5)

NTR 590

Special Topics. Special topics in nutrition will be offered periodically in response to specific needs identified by the faculty and/or a group of students. Examples of course elements that may comprise the content of this course include obesity, nutritional support systems, drug-nutrient interaction, inborn errors of metabolism, nutrition and the immune response. (v-0-v)

NTR 592

Individualized Clinical Practice. Based on individual needs and prior clinical experiences, the student may participate in a clinical practice experience in an area in which the student has had no prior contact or in which the student wishes to pursue advanced training. The clinical practice experience will be supervised by a faculty member selected by the student and approved by the director of the program. Limited to clinical nutrition Track II students. (0-v-v)

NTR 599

Independent Readings. The student undertakes directed readings and discussions with a preceptor on a selected topic in nutrition to complement his/her learning goals. It is expected that the student will write a substantive review of the topic after completing the readings. Students must contact a preceptor before registering. Permission of instructor. (0-0-v)

Obstetrics and Gynecology

OBG 601

Clinical Clerkship in Obstetrics and Gynecology. The course in clinical obstetrics and gynecology is designed to familiarize the student with the female reproductive tract. The course is divided into instructional units with instructional objectives and patient management in ambulatory and hospitalized patients. Emphasis is placed on routine gynecologic health care maintenance and patient education. Identification and management of high risk pregnancy, infertility and other endocrinopathies, gynecologic oncology, family planning, psychosomatic disorders, and normal psychological changes in obstetrics and gynecology, as well as gynecologic surgery are some of the areas covered in detail. Prerequisite: CCS 502. SU, FA, WI, SP. [8 weeks] Janus.

OBG 621

Normal Obstetrics. Emphasis in this elective is ideal support of the normal pregnant patient. Specific areas covered are preparation for childbirth (Lamaze, etc.), psychology of childbirth, alternatives to childbirth, Leboyer method, and parent-infant bonding. Prerequisite: OBG 601. [4-8 weeks] Merrick.

OBG 661

Gynecologic Oncology. Gynecologic oncology encompasses the diagnosis, management and follow-up of female reproductive tract tumors. The students are introduced to the use of diagnostic procedures such as colposcopy, laparoscopy, and biopsies, as well as treatment with chemotherapy and cancer surgery. The number of participants is limited. Prerequisite: OBG 601. FA, WI, SP, SU. [4-8 weeks] Yordan.

OBG 666

Ambulatory/Reproductive Health Care. This elective provides for additional clinical experience in family planning practices. The basis of the work is primarily ambulatory. The student interviews and examines patients, prescribes methods of family planning, and conducts follow-up under supervision of the staff. Prerequisite: OBG 601. SU, FA, WI, SP. [4-8 weeks] Neches.

OBG 667

Reproductive Endocrinology and Infertility. This elective provides clinical experience in diagnostic evaluation and therapeutic management of couples with infertility and women with gynecologic endocrine problems. The students participate in routine diagnostic studies such as ovulation timing, post-coital tests, endocrine evaluation, etc., and are introduced to the use of diagnostic and therapeutic procedures such as hysterosalpingography, ultrasonography, laparoscopy, hydrotubation, etc. The students also scrub on surgical reconstructive procedures involving the female reproductive system. Laboratory experience in performing hormone radioimmunoassays, sperm separation, antisperm antibody testing and other procedures may also be included. Prerequisite: OBG 601. SU, FA, WI, SP. [Minimum 4 weeks] Dmowski.

OBG 668

Perinatology. Emphasis of this elective is on the identification and management of high risk pregnancy. Ultrasonography, amniocentesis, medical and surgical complications of pregnancy, and operative obstetrics are some of the specific topics dealt with in detail. Prerequisite: OBG 601. SU, FA, WI, SP. [4-8 weeks] Sherline.

Occupational Therapy

OCC 501

Sensory Intergration Assessment. Focuses on the Southern California Sensory Integration Tests, the Southern California Post-Rotary Nystagmus Test, and clinical observations related to sensory integration. The course explores test and measurement issues, issues related to construction, validity, and reliability, in addition to the mechanics and administration of the tests. The course is designed for occupational therapists at various levels of experience. Prerequisite/corequisite: introductory statistics or equivalent experience as determined by consent of instructor. FA. (4) Opacich.

OCC 502

Sensory Integration Theory and Application 1. Presents an analysis of sensory integrative theory as it relates to normal and abnormal CNS development, emphasizing sensory processing disorders in the young child. Neural systems underlying bilateral integration, praxis, form and space perception, and other parameters are discussed. The material provides the basis for forming hypotheses pertinent in interpretation of sensory integrative diagnostics, as well as an in-depth study of related areas of research. Prerequisite: consent of instructor. WI. (4) Stallings.

OCC 503

Sensory Integration: Theory and Application II. This course is designed for the therapist interested in clinical application of sensory integration theory and technique. Emphasis is on development of the rationale for treatment and formulation of hypotheses of sensory integrative dysfunction. Activities are planned and analyzed with attention to non-traditional populations. Documentation and reporting of sensory integrative findings are addressed. It is expected that students will achieve a level of artistry in applying sensory integrative principles. Prerequisite: OCC 501 or documented experience with the SCSIT; OCC 502 recommended. SP. (4) Opacich.

OCC 504

Sensory Integration: Theory and Application III. This course is an exploration of more recent and advanced theories related to sensory registration, organization of praxis and language, and the role of the limbic system in sensory integration. The second part of the course will consider implications of sensory integrative disorders in the neonatal, psychiatric, and gerontological populations. Prerequisite: OCC 502. SU. (4) Stallings.

OCC 511, 512, 513, 514

Occupational Therapy Practicum I, II, III, IV. Supervised field experience in the exploration and applications of sensory integrative techniques with varied developmental and diagnostic populations. Prerequisite: consent of practicum coordinator. 511 FA (2-3), 512 WI (2-3), 513 SP (2-3), 514 SU (2-3)

OCC 521

Occupational Therapy Theory I. Provides the structure for examining principles of theory development and exploration of the factors which have influenced the practice of occupational therapy from 1917 to the present. Occupational therapy is looked at in relationship to the total health care system and the status it holds as a profession. An analysis of major philosophies and the contributions of major theorists provides the framework for exploring the knowledge base of occupational therapy. WI. (3) Novak, Walens.

OCC 522

Occupational Therapy Theory II. This course continues with the analysis of occupational therapy development as begun in OCC 521. The course also examines the impact that sensory integration and other related theories have had on the constructs of occupational therapy. An in-depth exploration is made of man's utilization of activity leading to the development of an individual, activity-based, conceptual model. Prerequisite: OCC 521 or consent of instructor. SP. (2). Novak, Walens.

OCC 531

Principles and Methods of Education. This course provides an overview of mechanics, principles and strategies of clinical and classroom instruction. The primary purpose of the course is to provide an introduction to the educational process through discussion and experiential methods. The therapist explores the use of behavioral objectives, taxonomical levels of learning, and the application of the theories of classical and contemporary learning theorists. The use of a variety of media and techniques to enhance learning is also emphasized. Microteaching is a major course activity utilizing videotape as a feedback mechanism. FA. (2) Hughes.

OCC 541

Related Assessment and Evaluation. A variety of instruments which can be utilized to determine level and characteristics of neurodevelopment function/dysfunction are surveyed. The course explores various allied health standardized and nonstandardized instruments and includes identification of the need for additional assessment tools for occupational therapists and other participating health professionals. The course is open to occupational therapists, physical therapists, nurses and other allied health professionals with consent of the instructor. Prerequisite/corequisite: introductory statistics or equivalent experience as determined by consent of instructor. WI. (3) Opacich.

OCC 581

Research Implementation. Consists of independent work towards implementation of a research project designed in HCE 581, under the supervision of faculty advisor. The course leads to the writing of a research paper incorporating rigorous application of clinical investigation and professional writing skills. Prerequisite: HCE 581. WI, SP, SU. (6) Hughes.

OCC 599

Independent Study. Creative project designed by student and supervised by faculty. (v-0-3)

Pathology

PTH 504

General Pathology. The general concepts of pathology are studied, with an introduction to degeneration, inflammation, immune response, neoplasia and metabolic and toxic pathological processes. The lectures and seminar groups are accompanied by laboratory work in the microscopic anatomy of pathological changes. Prerequisites: ANA 451, 472. FA. [65 hours] Templeton.

PTH 505, 506

Systemic Pathology and Clinical Pathology, I, II. A basic systematized study of human diseases affecting the various organ systems will be presented in lectures, seminars, and laboratory sessions. Concepts covered in PTH 504 will be stressed and correlated with the special pathology of organ systems and their functional and structural alterations. Clinical pathology will be included to provide the student with a basic understanding of the clinical laboratory, its usefulness in the diagnosis of disease states and its help in following the course of sick patients. The student shall be required to show proficiency in the performance of certain relatively simple, but important, laboratory tests and in the proper ordering of these tests. Prerequisite: PTH 504. [136 hours] Haber.

PTH 601

Pathology Clerkship. The primary emphasis is on techniques and procedures used in autopsy pathology under the direction of a departmental faculty member. In addition, there is active participation in surgical pathology. A review of systemic pathology and cytology is provided. Participation in regular departmental teaching conferences, case presentations and meetings provides opportunity for more general analysis and discussion of topics. Microscopes are provided. Available as a four-week elective only by special arrangements. Prerequisites: PTH 503, CCS 502. FA, WI, SP, SU. [8 weeks] Weinstein.

Pathophysiology

PPH 522

Biology of Cancer. Topics covered are: epidemiology of cancer; cell growth and proliferation; chemical, physical and viral carcinogenesis; immunity and cancer; radiation biology; chemotherapy; mechanism of metastasis; tumor products. (4-0-4)

Pediatrics

PED 601

Core Clerkship in Pediatrics. The principles and practice of care from birth through adolescence are studied by direct patient contact. The primary objective is to provide an opportunity for students to become proficient in the clinical basis of pediatric diagnosis and therapy. The clinical facilities of both the inpatient and outpatient services of Rush-Presbyterian-St. Luke's Medical Center, Mount Sinai Hospital Medical Center, Christ Hospital, and private physicians' offices are available. Regular seminars, conferences, lectures, and case presentations provide additional learning experiences. Prerequisite: CCS 502. FA, WI, SP, SU. [8 weeks] Jung.

PED 602

Pediatric Ambulatory Care. Primary focus is on the child and/or adolescent. From this perspective an understanding is developed in evaluating medical needs in terms of signs, symptoms, family, and environment. There is heavy emphasis on the study of normal growth, development, and behavior. All aspects of the provision of ambulatory care are studied. The Pediatric Ambulatory Service of Rush-Presbyterian-St. Luke's Medical Center is used as a teaching-learning environment. The level of responsibility allowed will be commensurate with prior clerkship experiences. Sites: ANCHOR, Mount Sinai Hospital Medical Center, and Christ Hospital. Prerequisite: PED 601. FA, WI, SP, SU. [4-8 weeks] Waskerwitz.

PED 603

Introduction to Newborn Medicine. This course is an introduction to the care of newborn infants and mothers, with emphasis on the normal sequence of events in the birth-recovery period, adaptation of baby and mother during the postpartum period, and care of the most common complications occurring at this age. Regular seminars and rounds are concerned with the study of specific assigned patients. The level of responsibility allowed students will be commensurate with their prior clerkship experiences. Prerequisite: PED 601. FA, WI, SP, SU. [4-8 weeks] Meier.

PED 604

Adolescent and Young Adult Medicine. This course provides direct experience in the care of patients hospitalized on the inpatient Medical Center's adolescent unit. There will also be opportunity to see patients in the outpatient office of the director. Emphasis is placed on the multidisciplinary management of adolescent patients. The student is provided experience with disease processes unique to adolescents or manifested differently in this age group as compared to other age groups. The level of responsibility allowed students will be commensurate with their prior clinical training. Prerequisite: CCS 502. FA, WI, SP, SU. [4-12 weeks] Strokosch.

PED 605

Advanced Pediatrics. Advanced studies in pediatrics and related disciplines provide increased depth and degree of responsibility in patient care. The clerkship also serves as a preparatory training phase

for postdoctoral residency experience. The course utilizes both the inpatient and outpatient facilities of Rush-Presbyterian-St. Luke's Medical Center. The level of responsibility allowed students will be commensurate with their prior clinical training. Prerequisite: PED 601. FA, WI, SP, SU. [4-12 weeks] Christian.

PED 611

Pediatric Cardiology. Both ambulatory and inpatient experience is obtained in caring for children with heart disease. Correlation of x-ray and electrocardiographic and cardiac catheterization data with physical findings is intensively studied. Through patient assignment, the student participates in intraoperative and postoperative surgical management. Outpatient offices, inpatient service, and cardiorespiratory laboratories are available to aid in study. The level of responsibility allowed students will be commensurate with their prior clerkship experiences. Prerequisite: PED 601 or MED 601. FA, WI, SP, SU. [4-12 weeks] Bucheleres.

PED 622

Emergency Pediatrics. At least 30-40 hours per week is involved in direct patient evaluation under the supervision of an attending pediatrician. This includes daily attendance in the pediatric emergency room and night call responsibility. The student is exposed to a majority of pediatric emergencies. The student will be required to maintain a log of patients seen and procedures performed, to attend teaching conferences given by a pediatrician, and to attend the didactic lecture on a suitable topic at one of the emergency pediatric conferences. A literature review will be required. Prerequisite: PED 601. FA, WI, SP, SU. [4-8 weeks] Wackerwitz.

PED 624

Pediatric Critical Care. Emergency medicine is the essence of this course. It is geared towards the development of an astute mind, a capacity for quick decisions, self-confidence and equanimity along with emphasis on acquiring a wide knowledge of the latest remedies, resourcefulness, and a good command of emergency procedures and equipment. Daily rounds, didactic lectures and monthly case conferences provide the backbone of the learning experience. The level of responsibility allowed will be commensurate with prior clerkship experience. Prerequisite: PED 601. FA, WI, SP, SU. [4, 8 or 12 weeks] Guerrero-Tiro.

PED 626

Pediatric Nephrology. This rotation will provide the student with experience in the care of children with renal problems throughout the Rush network, including those hospitalized at Mount Sinai Hospital Medical Center. Emphasis will be on normal and abnormal renal function, electrolyte imbalances, proteinuria, hematuria, hypertension, urinary tract infection and developmental diseases of the kidney and urinary tract. Prerequisite: PED 601. FA, WI, SP, SU. [4-8 weeks] Levy, London.

PED 631

Pediatric Radiology. Participants study diseases of children in an introduction to radiologic evaluation.

They observe radiologic procedures and participate in analyses, reviews and general radiology conferences. Analysis involves assessment of appropriateness of an examination, detection of pertinent findings, interpretation of findings, and synthesis of interpretation and clinical presentation into reasonable diagnoses. Specific pediatric conferences for those rotating in pediatric radiology occur daily. Prerequisite: PED 601. SU, FA, WI, SP. [4-8 weeks] Gardner.

PED 642

Pediatric Hematology/Oncology. This course provides an introduction to the care of children with a variety of hematologic disorders, or malignancies of childhood. Students will attend consultations with radiologists, pathologists and surgeons involved in the diagnosis of malignant diseases. Ward rounds are made daily for inpatients on the service and consultations. Outpatient clinics are held three half-days a week. Teaching seminars for students and residents are held weekly. Hematology laboratories are available for study in the morphology of blood cells and other hematological investigations. Fourth-year students only. Prerequisites: PED 601, MED 601. SU, FA, WI, SP. [4-8 weeks] Pierce.

PED 646

Pediatric Infectious Disease. This elective clerkship focuses on clinical and laboratory evaluation of pediatric infections. An active consultation service at Rush-Presbyterian-St. Luke's Medical Center and Mount Sinai Hospital Medical Center provides ample opportunity for patient evaluation and follow-up. Correct use of laboratory facilities is stressed. Pathophysiology of infectious diseases, differential diagnosis, and antibiotic use are discussed on daily ward rounds and weekly conferences. Current research is discussed at weekly seminars. The level of responsibility allowed students will be commensurate with their prior clinical training. Prerequisite: PED 601. SU, FA, WI, SP. [4 weeks] Lamprecht.

PED 671

Pediatric Pulmonary Medicine. This elective includes: a review of developmental and clinical pulmonary physiology; current diagnostic and therapeutic modalities; respiratory manifestations of diseases and other problems in children; daily rounds and consultations; and conference presentations. An elective article for publication or participation in a research project will be encouraged. Prerequisite: PED 601. SU, FA, WI, SP. [4-8 weeks] Duda.

Pharmacology

PHR 303

Nursing Pharmacology I. General information about drugs, particularly terms used in pharmacology. Factors affecting absorption, distribution, biotransformation, elimination, dose-response relationships and drug receptor concepts are introduced initially. Then representatives of specific classes of drugs affecting the peripheral nervous system and the endocrine system are discussed in detail to familiarize students

with the major kinds of drug actions. Small group tutorial sessions are scheduled weekly to discuss questions generated by lectures, readings and quizzes. Prerequisite: general physiology course. WI. (2-0-2) Moon.

PHR 304

Nursing Pharmacology II. Continuation of PHR 303. Therapeutically important classes of pharmacological agents such as autacoids; chemotherapeutic agents; toxicology; and drugs affecting CNS, cardiovascular and renal system are discussed in detail to illustrate the importance of pharmacological concepts and principles in nursing practice. Prerequisite: PHR 303. SP. (2-0-2) Moon.

PHR 501

Medical Pharmacology I. The general aspects of the physiochemical factors governing drug receptor interactions; importance of quantitative aspects of absorption, distribution, biotransformation and excretion of drugs are studied. The probable modes of drug actions that modify biological function and representatives of special classes of drugs, such as peripheral and neuropsychopharmacological, are studied to acquaint the student with the major kinds of drug actions. Laboratories and demonstrations extend the lecture material and offer the student practical experience with drug effects in the living organism. Small group discussions correlate lectures, laboratory exercises, and current therapeutic applications. Prerequisites: BCH 473, NEU 451, PHY 452. FA. (4-1-4) [45 hours] Moon.

PHR 502

Medical Pharmacology II. Continuation of PHR 501. Virtually all other therapeutically important classes of drugs are discussed. Topics include general and local anesthetic agents, analgesics, sedatives and hypnotics, cardiovascular and respiratory agents, diuretics, hypoglycemic agents, drugs acting on the blood and blood forming organs and toxicology. Prerequisite: PHR 501. WI. (4-1-4) [45 hours] Moon.

PHR 503

Medical Pharmacology III. Continuation of PHR 502. This course provides specific and detailed information concerning the pharmacology of chemotherapeutic agents. Lectures are organized as much as possible by grouping drugs according to their mechanisms of action. Topics include alkylating agents, antimetabolites, penicillins, cephalosporins, aminoglycosides, macrolites, tetracyclines, and miscellaneous agents. Prerequisite: PHR 502. SP. (2-0-2) [18 hours] Moon.

PHR 521

Laboratory Instrumentation. The course covers principles and applications of experimental equipment. Instrumentation will include: ultraviolet and visible spectrophotometry, spectrophotofluorometry, thin-layer chromatography, column chromatography, high pressure liquid chromatography, atomic absorption, liquid scintillation spectrometry, isotope use and handling, pH adjustment, sample weighing, melting

point determination, hematocrit determination, centrifugation, and glassware cleaning. SP. (0-6-3) Parkhurst.

PHR 551

Pharmacokinetics. Basic principles in the dynamics of absorption, distribution and elimination under normal conditions and in selected disease states are presented. Prerequisite: PHR 503. WI. (3-0-3) Nora, Parkhurst.

PHR 591

Advanced Topics in Pharmacology. A series of faculty and student presentations and discussions which may address any advanced topic related to pharmacology. FA, WI, SP. (2-0-2) Prancan.

PHR 598

Research in Pharmacology. By special arrangement. (v) Prancan.

PHR 599

Independent Study. (v)

PHR 611

Neuropharmacology I. A seminar course presenting both preclinical and clinical aspects of drugs used in the treatment of neurologic and psychiatric disorders. Prerequisite: PHR 503. FA. (3-0-3) Klawans.

PHR 612

Neuropharmacology II. Continuation of PHR 611. WI. (3-0-3) Klawans.

PHR 613

Neuropharmacology III. Continuation of PHR 612. SP. (3-0-3) Klawans.

PHR 622

Experimental Models in Pharmacology. A laboratory course concerned with the techniques involved in preparing experimental animal and tissue models for research. SP. (0-8-4) Boyd, Prancan.

PHR 631

Clinical Pharmacology and Therapeutics. This study of the integration of clinical work with therapeutic aspects of pharmacology includes: discussion of the pharmacology, clinical pharmacology, therapeutics, and clinical applications for major drug groups. Prerequisite: PHR 503. (4-0-4) MacLeod.

PHR 691

Pharmacology Seminar. FA, WI, SP. (1-0-1) Nora.

PHR 699

Dissertation Research. (v)

Physical Medicine and Rehabilitation

PMR 601

Physical Medicine and Rehabilitation. Experience in this course includes histories, physical evaluations, patient care, observation in various paraprofessional areas, and attendance at staff meetings. Student participation includes electrodiagnostic and motor point

blocks; other techniques and programs in which residents participate; and attendance at grand rounds. A research project is desirable. Prerequisite: SUR 601. SU, FA, WI, SP. [4 weeks] McCarron.

Physiology

PHY 451

Physiology I. This is a comprehensive physiology course which deals with essentially all of the major organ systems except the central nervous system. Concept formation and problem solving are stressed. Lectures are supplemented by small group discussions and laboratory exercises. The student is expected to discuss assigned study questions in the group discussions. Laboratory exercises are divided between conventional experiments and computer simulations of physiological systems. FA. (4-2-5) [68 hours] Rovick.

PHY 452

Physiology II. Continuation of PHY 451. Prerequisite: PHY 451. WI. (5-2-5) [63 hours] Rovick.

PHY 502

Introductory Membrane Biophysics. Study of fundamental processes involved in movement of ions across membranes, excitability in nerve and muscle, equivalent circuit analysis, artificial membrane systems, structure of membranes, and active transport processes. (4-0-4) Schauf.

PHY 503

Physiology of Striated Muscle. Topics include fundamentals of excitation-contraction coupling, mechanics of muscle, equivalent circuit analysis, muscle biochemistry, and developmental aspects of nerve and muscle. (4-0-4) Donaldson.

PHY 504

Neurophysiology. This course presents a conceptual approach to the understanding of central nervous system functions. Discussion includes normal function and selected areas of pathology and current research. A one-hour student presentation is required. SP. (2-0-2) Schauf.

PHY 513

Cardiovascular Physiology. Students will read and discuss the original papers that form the foundation for our current understanding of heart function and control, peripheral vascular control, and transcapillary exchange. The works will be evaluated both in terms of their significance at the time and their present relevance. (4-0-4) Rovick.

PHY 514

Functional Neurophysiology. The course will deal with physiology of neurons and glia, synaptic processes, sensory receptor physiology, spinal cord, cerebellum and motor control, peripheral mechanisms in sensory systems, and higher functions of the nervous system. Relevant neuroanatomical concepts will be included. SP. (4-2-4) Staff.

PHY 523

Circuit Theory and Practical Design. A tutorial laboratory course designed to acquaint the student with the principles of design and construction of various electronic equipment commonly encountered in modern physiology. (3-2-4) Guiffre.

PHY 524

Linear Differential Equations and Transform Methods. Study of first and higher order linear equation, linear algebra techniques, finite difference equations, Fourier series and transforms, Laplace transforms, and applications to solution of differential equations. (4-0-4) Mathias.

PHY 525

Linear Systems Analysis. Topics include block diagrams, feedback, frequency domain analysis, noise and its analysis, and partial differential equations and their solution. Prerequisite: PHY 524. (4-0-4) Mathias.

PHY 531, 532

Physiological Modeling I, II. This course covers control theory, the human motor system, and feedback interactions in the human motor system. 531 SU (4-0-4), 532 FA (4-0-4) Gottlieb.

PHY 555

Physiology of Cellular Homeostasis. Integrated physiological content related to cellular homeostasis/viability in humans. Focus is on those selected aspects of cardiovascular nervous, hormonal, respiratory, and renal systems that account for regulation of cellular fluid, electrolyte and energy/thermal balances. Prerequisite: undergraduate mammalian anatomy and physiology or permission of course director. FA. (5-0-5) Schauf, Donaldson.

PHY 590

Special Topics in Physiology. An advanced course dealing with selected topics in physiology. The particular subjects vary from year to year. (v)

PHY 598

Introduction to Research. A tutorial course designed to familiarize students with the literature and techniques applicable to modern physiological research. FA, WI, SP, SU. (v-v-v)

PHY 640

Applied Electrophysiology. An advanced laboratory course introducing students to the basic techniques of modern electrophysiology. Prerequisites: PHY 502, 503, 523. (3-6-6) Staff.

PHY 641

Molecular Mechanisms in Control of Ion Permeability. An advanced course dealing with special topics in the molecular control of excitability and laboratory instruction in voltage clamp techniques. Offered alternate years by arrangement. Prerequisite: PHY 502. (4-0-4) Schauf, Cohen.

PHY 651

Advanced Topics in Muscle Physiology. Topics include equivalent circuit of skeletal muscle, problems in excitation-contraction coupling, and molecular events in the generation of mechanical force. Prerequisite: PHY 503. (4-0-4) Donaldson, Eisenberg.

PHY 653

Problems in Synaptic Physiology. A detailed review of current experimental and theoretical problems in transmitter release and activation of postsynaptic receptors. Prerequisites: PHY 451, 503, 514. (4-0-4) Nelson.

PHY 655

Sensory Neurophysiology. An advanced tutorial dealing with the function of sensory systems and information processing. Prerequisite: PHY 514. (4-0-4) Hoeppner.

PHY 656

Neural Correlates of Behavior. An advanced tutorial dealing with the organization of simple invertebrate nervous systems and the relation between electrical properties of its elements and its behavior. Prerequisites: PHY 514, 655. Alt. SP. (4-0-4) Michael.

PHY 690

Research Topics in Physiology. With a member of the staff, the student participates in a laboratory-based experience in an area of current research. The level of participation depends on the student's background and will include examination of the literature, a review of the topics being investigated, and opportunities to participate in experimental work. In addition to work in the laboratories with members of the staff, independent experimental or bibliographic projects may be undertaken with the approval of a faculty member. At completion, a report is prepared describing the work attempted and accomplished. Prerequisite: PHY 452. SP, SU. [8 weeks] Schauf.

PHY 699

Thesis Research. Postcandidacy research by arrangement with staff. FA, WI, SP, SU. (v-v)

Preventive Medicine

PVM 451

Preventive Medicine. A general survey of three topics. Biostatistics provides an introduction to the use of statistical methods, particularly in the statistical evaluation of research data; a general survey of epidemiology provides an introduction to current methods and problems in practice; and, finally, preventive medicine deals with socioeconomic factors in health care, preventive practices, and environmental and occupational health. The course is conducted through lectures, panels, and seminars. SP. [33 hours] Madden.

PVM 521

Introduction to Statistical Data Processing. An introduction to computer programming using statistical software programs. Designed for students

taking PVM 541 and subsequent courses. Students will run statistical programs on the computer. (1)

PVM 541

Biostatistics I. A basic introduction to the understanding and use of statistics in the health sciences. Topics covered include: descriptive statistics, probability, sampling, point and interval estimation, and hypothesis testing with student's t and chi-square. (3-0-3) Norusis, Shott.

PVM 542

Biostatistics II. The basic tools necessary to design and analyze study along sound statistical lines. In this course, the student will be introduced to the basis of sampling design and regression analysis. The student will also be taught to use a statistical package on the computer. Prerequisite: PVM 541. (3-0-3) Norusis, Shott.

PVM 543

Biostatistics III. The course will primarily consider the techniques of analysis of variance and analysis of covariance. There will also be some consideration of multivariate analysis techniques. Prerequisite: PVM 542. (3-0-3) Norusis, Shott.

PVM 599

Independent Study in Statistics. Advanced topics by arrangement with instructor. (v)

PVM 601

Primary Care. Ambulatory care in a physician's office is the basis for this clerkship. On a preceptorial basis in selected physicians' offices, the students study in depth the contemporary modes of office care, with emphasis on preventive measures and follow-up care. By individual arrangement, experience is available in a variety of settings, such as group practice, inner city clinics, rural practice, etc. Experience in foreign countries is also available. Prerequisite: CCS 502. FA, WI, SP, SU. [4-12 weeks] Schoenberger.

PVM 603

Occupational Medicine. This experience provides a combination of didactic and practical work in approaching the problems of health maintenance and environmental hazards in diverse industrial settings. Prerequisite: MED 601. FA, WI, SP, SU. [8 weeks] Kassriel.

PVM 604

Field Experience in Epidemiology. Emphasis is placed on the collection and analysis of data obtained in epidemiologic studies. The student may select a project and is expected to become familiar with field epidemiologic techniques and tools, including questionnaire design and interviewing. Primary focus is on studies of cardiovascular disease, with special emphasis on the control of hypertension and prevention of cardiac disease. Prerequisite: CCS 502. FA, WI, SP, SU. [12 weeks] Schoenberger.

PVM 605

Research Studies in Health Care Delivery. Under supervision, the student undertakes research on problems in health care delivery. The models available in the Medical Center are utilized primarily, but other systems may be studied by arrangement. Such areas as health evaluation programs, the use of paramedical personnel, medical audit, and emergency room care are available. Prerequisite: CCS 502. FA, WI, SP, SU. [8 weeks] Schoenberger.

Psychiatry**PSY 501**

Introduction to Psychopathology. Introduction to psychopathology is designed to prepare medical students for future clinical experiences through study of the range of psychopathology that will be manifested in clinical situations. By reviewing diagnostic criteria and by studying etiological factors underlying various forms of psychopathology that range from disturbances in cellular and neurotransmitter function through psychological and social stresses, students should develop a basic understanding of common psychiatric conditions which will build a base of knowledge for their recognition and for management of psychopathology in future clinical experiences. Prerequisites: BHV 451, 453. FA. [34 hours] Zadylak.

PSY 601

Clerkship in Psychiatry. The core psychiatry clerkship provides basic clinical and didactic exposure to the major psychiatric disorders focusing on their diagnosis and management. Emphasis is placed on aspects of psychiatry relevant to the primary practitioner with a holistic approach to patient care, recognizing the significant biological, psychological, and social/environmental factors that contribute to the patient's illness. Systems concepts of care are presented in an integrated manner through graded, intensive clinical experiences. Inpatient, partial hospitalization, and ambulatory settings are employed for assignment of patient responsibility. Prerequisite: CCS 502. FA, WI, SP, SU. [6 weeks] Zadylak.

PSY 602

Psychosomatic Medicine. The relationship between internal and external stresses and the development of physical symptomatology as well as therapeutic interventions are studied. Adults and children hospitalized on medical, surgical, obstetric, or pediatric services are studied with supervised diagnostic evaluation and continuing management. The role of the milieu—home, community, and hospital—is emphasized. Special work is done with dialysis patients, transplant patients, patients with malignancy, and those undergoing intensive care. The clerkship is planned as an experience in all areas, with emphasis depending upon student interest and needs. Prerequisite: PSY 601. SU, FA, WI, SP. [4-8 weeks] S. Cavanaugh, Chor, Zadylak.

PSY 603

Child Psychiatry. The important variations in behavior in the young are studied, with emphasis on various therapeutic approaches in the setting of a day hospital for children. The pediatric floor, private office, outpatient clinic and the Child Psychiatric Clinic are also utilized as settings for clinical observations. Prerequisite: PSY 601. SU, FA, WI, SP. [8 weeks] P. Fink.

PSY 604

Adult Psychiatry. The objective of this elective is to increase the student's knowledge of various psychiatric disorders and to provide an opportunity to improve skill in therapy. Drug therapy, individual psychotherapy, family therapy, and group therapy are studied. Emphasis is placed on crisis management and brief therapy in a setting providing continuity of care, including in-home visits, community clinics, hospital clinics, partial hospitalization, and full-time hospitalization. Prerequisite: PSY 601. SU, FA, WI, SP. [8 weeks] Cavanaugh.

PSY 631

Medical Psychotherapy. The varieties of psychotherapies are reviewed and the essentials of medical psychotherapy are studied in detail. The application of group systems is developed. Practical supervised experiences provide the means by which psychotherapeutic interventions are learned. The emphasis will be on some of the newer brief techniques, such as cognitive therapy and interpersonal therapy. The interfacing of individual medical psychotherapy with neuropsychopharmacotherapy and social system therapies will also be elaborated. Prerequisite: PSY 601. SU, FA, WI, SP. [8 weeks] Epstein.

PSY 641

Law and Psychiatry. The Section on Psychiatry and the Law provides the elective student with a comprehensive clinical and academic introduction to sociolegal issues in contemporary psychiatric practice and research. Through clinical rotation at the Isaac Ray Center of the Department of Psychiatry, the student will gain firsthand experience in the evaluation and treatment of selected mentally ill offenders under supervision. The student also will be expected to cover a reading list dealing with the important topical issues in sociolegal psychiatry: civil commitment, competency to stand trial, the insanity defense, right to treatment, right to refuse treatment, confidentiality and privilege, etc. Participation in an ongoing appropriate research project is encouraged. The student receives individualized instruction from an attorney, a postdoctoral fellow in law and psychiatry, the director of the section, and appropriate staff of the Isaac Ray Center. Prerequisite: PSY 601. SU, FA, WI, SP. [8 weeks] Cavanaugh.

Psychology

Where no prerequisite is listed, it is assumed that students enrolling will have an adequate background on which to build. Students who have any questions about preparation should consult with the instructor of the course.

NOTE: Courses numbered 550 and above require admission to the graduate program in psychology and permission of the program director.

PSC 501

Psychology of Learning. This course examines basic learning processes from an historical perspective and through problems of current interest. Topics include principles of classical and operant conditioning, discrimination and generalization, the nature of reinforcement, aversive control of behavior, biological constraints on learning, and neural substrates of learning and memory. (3)

PSC 505

Statistics I. Same as PVM 541. (3)

PSC 506

Statistics II. Same as PVM 542. (3)

PSC 507

Statistics III. Same as PVM 543. (3)

PSC 508

Methods in Behavioral Research. This course examines theory and research methodology as they influence the formulation of hypotheses and research designs in behavioral, social and clinical research. Prerequisite: PSC 507. (3)

PSC 521

Biological Bases of Behavior. This course examines the neural substrates of behavior. Topics include synaptic transmission and patterns of neural activity, sensory and motor processes, sleep and arousal, emotion and motivation. (3)

PSC 522

Psychophysiology. Evaluation of psychological processes by means of physiological responses. Methodology and empirical data in the psychophysiological analysis of attention, perception, learning, and memory. Critical analysis of nervous system organization and responsiveness to acute stress and to chronic dysfunction. Prerequisites: PSC 501, 521. (3)

PSC 531

Developmental Psychology I: Infancy through Adolescence. The first of a two-course sequence on the normative processes of behavioral change across the life span. Major theories of cognitive, social, personality, and emotional development from early infancy through adolescence are presented. Methodological issues are studied in the context of current and classical research findings. (3)

PSC 532

Developmental Psychology II: Adulthood and Aging. A continuation of PSC 531. Survey of current research and theory in development throughout adulthood. Empirical data concerning the influence

of biological changes, social factors, cognitive processes, mental and physical health on adult development are reviewed. Prerequisite: PSC 531. (3)

PSC 534

Developmental Psychobiology. Brain-behavior relationships from infancy through puberty. Emphasis is placed on animal models and/or neurobehavioral analyses of attention disorders, hyperactivity, retardation, aggression/dominance, autism, etc. The anatomical, neurophysiological and behavioral components of brain development and brain damage are examined throughout the early developmental period. Prerequisite: PSC 501, 521. (3)

PSC 536

Psychology of Aging. An advanced analysis of the psychology of aging, with consideration of biological and psychosocial factors affecting developmental changes in late adulthood. Topics include methodological issues in research, cognitive processes, personality, psychopathology, and the influence of health and illness on aging and behavior. Prerequisite: PSC 532. (3)

PSC 541

Theories in Social Psychology. Theoretical approaches to the study of social interaction. Analysis of individual, group and collective behavior from both psychological and sociological perspectives. Topics include: general theories and methods, empirical data on attribution and social perception, attitude formation and change, conformity, small groups, and collective behavior/mass movements. (3)

PSC 542

Social Bases of Behavior. Examination of family, small group, and social networks as determinants of behavior and as environments within which behavior occurs. Includes theory and processes of role allocation, dyad and triad formation, coalitions and conflict. (3)

PSC 543

Topics in Medical Sociology. Review of current topics which are announced each term. May be repeated for credit. (1-3)

PSC 545

Health and Illness Behavior. Empirical review of concepts basic to the understanding of health and illness behavior, emphasizing a multidimensional model. Topics include personality, stress, the development of illness; coping with illness; acute vs. chronic illness; factors influencing patient compliance; theories of pain; developmental stage of conceptions of illness; biological, social, and psychological risk factors in illness. (3)

PSC 548

Program Evaluation. Theory and practice of program evaluation in health care settings. Topics include the uses of evaluation in health service organizations, methodological issues in program assessment, and problems encountered in communication and implementation of evaluation findings. Prerequisites: PSC 507, 541. (3)

PSC 551

Theories of Personality. An examination of the major traditions in personality theory and research: psychoanalytic, trait, social learning, and phenomenological. Empirical research relating to personality consistency and behavioral specificity is reviewed. (3)

PSC 553

Psychopathology. Description of psychopathology, with review of defining signs and symptoms in children and adults. The interplay of social, learning, and physiological factors in the etiology of behavioral disorders is considered. Prerequisites: PSC 532, 551. (3)

PSC 554

Behavior Disorders in Children. Major behavioral disturbances of childhood and their relationship to psychological theories and research. Prerequisites: PSC 531, 553. (3)

PSC 557

Human Neuropsychology. Consideration of complex psychological functions as they relate to the human central nervous system. Topics include attention, emotion and motivation, perception, psychomotor behavior, language, memory and problem-solving. Empirical data concerning cerebral localization, asymmetry of function, and cerebral plasticity is reviewed. Prerequisite: PSC 521. (3)

PSC 558

Psychology of Sleep. Major theories of mental activity during sleep, including a critical analysis of the relationship between neurophysiological activity and psychological activity during sleep and the interaction between sleeping and waking. Methodological approaches to dream content analysis and to the study of dream function are considered. Prerequisite: PSC 521. (3)

PSC 571

Principles of Psychotherapy. An introduction to verbal psychotherapy. Survey and analysis of techniques in psychoanalytic and neo-analytic, client-centered and cognitive psychotherapy. Prerequisite: PSC 551. (3)

PSC 572

Principles of Behavior Change. An overview of theoretical approaches, empirical studies, and practical issues in the field of behavioral assessment and intervention. Behavioral observation, principles of behavioral management, and cognitive restructuring. Prerequisite: PSC 501. (3)

PSC 575

Assessment of Intelligence. Examination of theoretical and practical issues in the measurement of intelligence. Topics include the nature of intelligence, the construction and use of intelligence tests, administration of standardized tests, analysis and presentation of test data. Lecture and laboratory. (3)

PSC 576

Assessment of Personality. Historical and theoretical issues in projective and objective personality assessment. Methodological issues involving empirical vs. rational test construction, clinical vs. actuarial prediction, response styles, etc., are considered. Lecture and laboratory. (3)

PSC 581

Directed Research. Individual projects (nondissertation research) under the supervision of a faculty member. Arranged by consultation with the program director. (1-6)

PSC 590

Special Topics in Psychology. Advanced topics selected for examination and discussion. Topics vary from term to term. (1-3)

PSC 599

Directed Readings. Readings in a topic area of particular interest under the direction of a faculty member. Arranged by consultation with the program director. (1-3)

PSC 605

Professional Issues. Topics of professional concern in health psychology. Issues in professional identity; APA standards of ethics; client/patient/subject rights; legal issues; and interface with other health disciplines. (3)

PSC 611, 612, 613

Practicum in Assessment and Intervention Skills I, II, III. A three-quarter sequence of supervised experience in assessment and intervention. This practicum involves experience in a variety of psychotherapeutic techniques. Students are supervised in the administration, scoring, and interpretation of intelligence and personality tests, including the Wechsler Intelligence Scale, Stanford-Binet, MMPI, TAT, and Rorschach. (2) (2) (2)

PSC 616, 617

Practicum in General Clinical Psychology I, II. A two-quarter sequence of supervised experience with both children and adults. The practicum integrates clinical course content with the evaluation and management of behavioral and emotional problems in diverse patient populations. Prerequisite: PSC 613. (3) (3)

PSC 621

Clinical Health Psychology. An examination of psychological processes as they relate to the diagnosis and treatment of physical disease. Prerequisite: PSC 553. (3)

PSC 622

Advanced Psychotherapy. Prerequisite: PSC 571. (3)

PSC 623

Advanced Behavioral Interventions. Prerequisite: PSC 572. (3)

PSC 625

Advanced Rorschach Interpretation. Theory of the Rorschach projective process and the administration, scoring and interpretation of test protocols. Issues concerning norms, reliability, personality description, diagnosis of psychopathology, and use in planning treatment are covered. Prerequisites: PSC 553, 576. (3)

PSC 629

Practicum in Clinical Health Psychology. Intensive supervised experience with adult medical populations. Emphasis is given to the evaluation of medically related problems from a psychological perspective, and the development of integrated, comprehensive treatment plans. May be repeated for a maximum of six credits. Prerequisite: PSC 617. (3)

PSC 631

Pediatric Psychology. Principles of clinical health psychology as they apply to children and adolescents. Intervention methods appropriate to children in inpatient settings are emphasized. Prerequisite: PSC 553. (3)

PSC 633

Assessment in Pediatric Psychology. Theoretical and practical issues in the assessment of individuals aged 3-16. Emphasis is given to assessment, recommendations for treatment/intervention, and consultation with parents and with medical and professional staff. Lecture and laboratory. Prerequisites: PSC 575, 576. (3)

PSC 639

Practicum in Pediatric Psychology. Intensive supervised experience in a variety of diagnostic and intervention techniques appropriate to pediatric populations. May be repeated to a maximum of six credits. Prerequisite: PSC 617. (3)

PSC 641

Clinical Neuropsychology. Systematic analysis of behavioral disturbances associated with disease, injury, and/or functional alteration of the central nervous system; behavioral manifestations associated with specific neurological syndromes and diseases. Prerequisite: PSC 557. (3)

PSC 643

Assessment in Clinical Neuropsychology. Rationale, procedures, and substantive content of neuropsychological consultation. Selection and administration of appropriate assessment procedures, evaluation and integration of data, formulation of treatment and management recommendations, and consultation with physicians and other health professionals are considered. Lecture and laboratory. Prerequisites: PSC 557, 575, 576. (3)

PSC 649

Practicum in Clinical Neuropsychology. Supervised experience in neuropsychological assessment and consultation. May be repeated for a maximum of six credits. Prerequisite: PSC 617. (v)

PSC 651

Clinical Sleep Disorders. Diagnosis and treatment of sleep and arousal disorders as recognized by the Association of Sleep Disorders Centers. Major diagnostic categories are reviewed in terms of clinical presentation, etiology, laboratory findings, and potential therapies. Lecture and laboratory. Prerequisite: PSC 558. (3)

PSC 659

Practicum in Clinical Sleep Disorders. Supervised experience in the sleep disorders service: patient interviews, sleep assessments, laboratory evaluations, and case presentations. May be repeated to a maximum of six credits. Prerequisites: PSC 558, 617. (3)

PSC 669

Advanced Practicum. Practicum experience in the field of a student's special interest. Arranged by consultation with the program director. (v)

PSC 681

Directed Research. Individual projects (nondissertation research) under the supervision of a faculty member. Arranged by consultation with the program director. (v).

PSC 699

Dissertation Research. (3-12 per quarter)

PSC 700

Internship. (Noncredit)

Radiology

RAD 521

Radiation Oncology. An introduction to neoplastic diseases and their management services with emphasis on improvement of physical diagnostic skills, relational anatomy and the pathophysiology of different cancers. Prerequisite: PTH 501, MED 501. SU, FA, WI, SP. (2) Hendrickson, Lee.

RAD 522

Basic Radiation Biology. The course is designed to introduce students to the general principles governing the effects of ionizing radiation on living organisms. A general knowledge of radiation physics and biology is assumed. The course will consider radiation effects on a progression of organism complexities from single cell systems through organized tissue systems and complex organisms through the known effects on man. Emphasis will be on those radiobiological principles which closely relate to cancer research such as the relationship of linear energy transfer to relative biological effectiveness and the role of oxygen as a radiation modifying agent along with other protecting and sensitizing agents. SU, FA, WI, SP. (3) Hanson.

RAD 601

Diagnostic Radiology. Basic radiologic principles are demonstrated and the role of diagnostic radiol-

ogy as a clinical setting for patient care and medical and surgical specialty consultations is emphasized. Seminars, classes, and programmed material especially prepared for medical students are provided. Elective experience in several departmental subsections is available. Students prepare one case for the teaching file. Prerequisites: MED 601, SUR 601, PED 601. SU, FA, WI, SP. [4 weeks] Adler.

RAD 602

Physics of Diagnostic Radiology. Topics include: fluoroscopy, x-ray image intensifiers, cinefluorography, television, body-section radiography, stereoscopy, magnification radiography, the subtraction technique including digital imaging, copying radiographs, xeroradiography, computed tomography, ultrasound, focused nuclear magnetic resonance scanning. Prerequisite: RAD 601. SU, FA, WI, SP. [24 hours] Chung-Bin.

RAD 603

Introduction to Radiation Safety and Diagnostic Radiological Physics. Topics include: medical x-ray and gamma-ray protection for energies up to 10 MeV, equipment design and use, maximum permissible dose equivalent, fluoroscopic and radiographic equipment, gamma-beam sealed source equipment, calibration, survey procedures, personnel monitoring, production of x-rays, x-ray generators, attenuation, filtration, grids, intensifying and fluoroscopic screens, physical and photographic characteristics of x-ray film and film processing, geometry of the radiographic image. Prerequisite: RAD 601. SU, FA, WI, SP. [24 hours] Chung-Bin, Mengeot.

RAD 606

Nuclear Medicine. All facets of the disciplines of nuclear medicine are studied, with particular emphasis on radionuclide scanning of organ systems for diagnostic and research purposes. Emphasis is on pathophysiologic correlation and case study. Literature review and individual topics are encouraged to provide in-depth study in the broad field of nuclear medicine. Prerequisite: MED 503. FA, WI, SP, SU. [2-4 weeks] Fordham.

RAD 621

Radiation Oncology. This course will develop the basic concepts and principles of nonsurgical cancer management. The natural history of cancers in various organs will be reviewed and therapeutic strategies developed based on the pathophysiology of different cancer sites. The location of critical normal organ systems will be stressed. Their tolerances to treatment will be detailed and methods to optimize treatment with maximal tumor dose and minimal normal tissue developed. Correlation of all body imaging systems (radionuclide, standard and computer radiographic) with treatment simulation and body surface landmarks will be emphasized. Prerequisites: MED 503, PTH 503. SU, FA, WI, SP. [4-8 weeks] Hendrickson, Lee.

RAD 622

Introduction to Therapeutic Radiological Physics. Studied are: basic computation and physics; interaction of radiation with matter; definition and measurement of dose; therapy machines; physical and clinical dosimetry including backscatter, percentage depth dose, tumor-air ratio, tumor maximum ratio, isodose distributions, wedges, compensators, correction for lungs and curvature; radioisotopes; radium and its substitutes; interstitial and intracavitary applications; electron beams, time-dose relationship including nominal standard dose; radiation protection; quality assurance. Prerequisite: RAD 621. SU, FA, WI, SP. [24 hours] Kartha.

RAD 623

Therapeutic Radiological Physics. The five "P's" of radiation therapy are examined: prescription, physical dose, planning, precision, and pattern of treatment output; atomic structure; nuclear structure; fission and fission reactors; fusion; radioactive decay; natural and artificial radioactivity; interactions of particulate radiations including electrons, pions, neutrons, and heavy-charged particles; production of x-rays including x-ray tubes and circuits; high-energy treatment machines; interactions of x- and gamma-rays, measurement of exposure, radiation quality, absorbed dose; calibration of high-energy photon and electron beams; dose distributions for external-beam therapy and sealed-source therapy; computerized treatment planning; radiation protection from external and internal sources. Prerequisite: RAD 622. SU, FA, WI, SP. [36 hours] Kartha.

RAD 624

Dosimetry Applied to Therapeutic Radiology. This course is designed for those interested in therapeutic radiology and is organized as a rotation in the Section of Medical Physics. The laboratory exercises consist of the determination of single-, two-, three-, and four-field isodose distributions. These exercises of distributions take into account variations of field size, source-skin distance, source-detector distance and source-axis distance. Special studies for the treatment of breast, larynx, pelvis, and head are performed. Calculations are performed by hand and by a PDP 11/45 computer. Special problems such as upper mantle and "dog leg" are performed. SU, FA, WI, SP. [160 laboratory hours] Kartha.

RAD 631

Physics of Nuclear Medicine. Topics include: mathematics for nuclear medicine, physical quantities and units, mechanics, thermodynamics, electricity and magnetism as applied to nuclear medicine, nuclear reactions, decay schemes, half-life, decay series together with parent-daughter relationships and applications, interaction of radiation with matter, detectors used in nuclear medicine, *in vitro* counting systems, liquid scintillation counting, pulse height

spectrometry, imaging instrumentation including rectilinear scanner, scintillation camera, emission tomography, application of the computer to nuclear medicine including imaging and *in vivo* studies, biological effects of radiation, absorbed dose from internal sources. Prerequisite: RAD 606. SU, FA, WI, SP [22 hours] Silverstein.

Religion & Health

REL 452

Bioethics in Health Care. This is an interdisciplinary course that considers representative ethical issues in health care; paternalism vs. the enhancement of patients' autonomy as perspectives around which to organize health care; principles of ethical decision making in health care; specific issues, such as abortion, treatment of the dying, allocation of resources, and religious and other societal factors that can lead to ethical dilemmas. (2-0-2)

REL 453

Illness and Faith. This course examines the patients' understanding of body, time, shame, community, the self, sacrifice and suffering, religious resources, and the relationship between God and illness in light of their faith. Employs seminar method and some clinical materials. Limited enrollment requiring instructor permission. (2-0-2)

REL 461

Living and Dying Seminar I. This course examines the fears and feelings elicited by the clinical experience of contact with the dying patient, the fears and feelings of the critically ill patient and how to deal realistically with these fears in a clinical setting. Includes supervised patient contact. Permission of instructor. Graded P or N. (1-3-2)

REL 462

Living and Dying Seminar II. Continuation of REL 461. Individual conferences are arranged with advanced students on problems raised in the clinical experiences. Graded P or N. (1-3-2)

REL 463

Clerkship in Jewish Medical Law.

REL 501

The Art of Healing. An 11-week intensive clinical course focuses on the interpersonal dimensions of the healing process; appreciation of the patient as a total being; exploration of the anxieties and inhibitions generated in relating to the sick; specialized communication skills; and perception of the patient as a partner in the healing task. The course also helps the student discover and use his/her own uniqueness in relating therapeutically to the sick. Prerequisites: For theological students, at least one year of graduate theological education and an interview with one of the faculty of the Department of Religion and Health. For nontheological students, an interview with one of the faculty of the Department of Religion and Health. (9-25-v)

Note: Students may be accepted for this course from any discipline or field of study. The descriptions

of seminars that follow are built upon the experience of teaching the course for theological students. However, no difficulty is inherent in incorporating nontheological students into the course.

REL 611

Clinical Case Conference. This clinical seminar uses verbatim written materials or tape recordings of actual patient visits by students. One student presents material each seminar period; all students present in a sequence which they construct. Verbatim materials are circulated to seminar members in advance of the seminar to allow careful preliminary study.

The supervisor and the seminar members engage the presenting student in an examination of his ministry. Together they explore the student's understanding of the patient's communication, the student's assessment of the patient's pastoral needs, the student's attempt to carry out an appropriate ministry, the student's ability to use his/her own faith meaningfully in his/her ministry, and the meaning of the student's subjective response to patients. Prerequisite: REL 501. (3-25-v)

REL 615

Sermon Preparation and Delivery. Students prepare a sermon manuscript and give the sermon in the hospital chapel with their seminar group as the audience. The seminar then relocates and the preaching experience is examined in terms of its appropriateness to the hospital congregation, its articulation of the faith, its witness to the faith and development of the student, and its effectiveness as interpersonal communication. Usually these sermons are amended and given during a Sunday worship service in the hospital chapel. Prerequisite: REL 501. (1-1-v)

REL 621

Personal and Professional Concerns. This seminar gives students the opportunity to report spontaneously on critical events and issues in their hospital ministry; to examine issues of personal or professional identity; to examine problems in communicating or functioning within the seminar group; to explore the meaning and context of their ministry, their relations with other medical center disciplines, their ability to think theologically about their experience; to examine individual problems of functioning effectively in the pastoral role; and to assist students in evaluating their progress in training. Prerequisite: REL 501. (1-1-v)

REL 623

Didactic Presentations. Presentations are made by professionals in other disciplines, by supervisory staff and by students themselves in an attempt to bring theoretical material to bear on the practical work of ministry and to assist the student in clarifying his/her operational concepts. Prerequisite: REL 501. (1-1-v)

From time to time the didactic presentations are more structured to cover various important topics. Some subjects that have been presented in the past or

that will be covered in coming quarters include:

Suffering: Its Importance for Health. This seminar explores the various philosophical and theological responses to suffering and their expression among hospital patients. The implications of the different responses to suffering for healing are explored.

Aging, Faith, and Health. A brief survey of the important biological, psychological and social changes that accompany aging sets the background for an exploration of the role of faith in the life of older persons, and particularly in their adjusting to and coping with illness.

Faith as a Factor in Health. A brief survey of the major theories of disease and health, scientific and unscientific, Western and nonWestern, forms the background for a review of the literature on the role of faith, trust and hope in recovery from illness. Case examples from student experience are also reviewed. Prerequisite: REL 501. (2-0-v)

REL 650

Individual Supervision. Supervisor and student together develop an individualized contract for learning. The student is enlisted as a partner in the learning process by helping him/her identify goals, plan for learning, and evaluate progress. Written records of pastoral work are examined in detail as well as written and oral attempts of the student to understand and incorporate the values from the total program experience and to synthesize the clinical, theological, and theoretical data encountered. Supervision of the student on the floor while seeing patients is also provided. Prerequisite: REL 501. (v-v-v)

REL 681

Guided Study or Research. Each student is expected to undertake a reading or research program that is complementary to his/her learning goals and/or remedial in terms of gaps in basic preparation for understanding pastoral care. A supervisor is consultant to the student for the study program. *Note:* Expected of year-long students only. Prerequisite: REL 501. (v-v-v)

REL 685

Clinical Practice. Each student has a designated area of pastoral responsibility, usually 40 to 50 beds. The student is assisted to develop working relationships with the treatment team and to develop a style of coverage appropriate to the area. Each student serves once per week as on-call chaplain for overnight or weekend coverage and/or does an evening of visiting with preoperative patients. These special duties involve the student of ministry in situations of crisis or heightened anxiety. Clinical practice requires special arrangements for nontheological students. Prerequisite: REL 501. (v-25-v)

REL 689

Comprehensive Evaluations. Each student prepares a written evaluation of himself/herself and the total program experience. This evaluation is shared with the supervisor and fellow students and examined with the student in seminar and individually. The evaluation periods assist the student to examine his/her investment in learning, goals, use of program resources, relationships, and progress toward learning goals.

The supervisor prepares a detailed written evaluation of the student at the end of the program that is usually shared with the student. The comprehensive evaluations are necessary for determining satisfactory completion of the course and credit where appropriate. The course may not be taken more than twice for academic or field work credit. Prerequisite: REL 501. (v-0-v)

Speech and Hearing Sciences

SHS 501

Speech and Hearing Science. Various aspects of physiologic and acoustic phonetics are examined as well as the relationship between production and perception. Introductory psychoacoustics, instrumentation, experimental and applied research in speech and hearing science is critically examined. (3-1-4)

SHS 505

Audiology I. Basic audiological methods, pure tone audiometry, masking, speech audiometry, and tolerance testing. (3-0-3)

SHS 506

Audiology II. Special behavioral methods designed to provide differential diagnosis of auditory pathology. (3-0-3)

SHS 511, 512, 513, 514, 515

Speech-Language Pathology Practicum I, II, III, IV, V. Supervised clinical experience with patients presenting speech, language, voice, fluency or swallowing impairments. Students develop evaluative, therapeutic, counseling and report writing skills. The relationship of speech-language pathology to other health care professions is examined. (v-v-v)

SHS 516, 517, 518, 519, 520

Audio Practicum I, II, III, IV, V. Supervised clinical experience with patients displaying various hearing impairments. Students develop skills in diagnostic evaluation, obtaining case histories, counseling and treatment techniques for pediatric through geriatric patients. The relationship of audiology to other health care professions is examined. (v-v-v)

SHS 521

Language Acquisition. Examines relationships among structure and use of language including cognition, environmental stimulation, ethnic and social status factors. The course considers language acquisition from theoretical, neuralorganic, and descriptive perspectives. (3-0-3)

SHS 522

Language Disorders. Language disorders in children. Emphasis is on the nature of language delay or breakdown associated with known or unknown etiologic factors. Consideration of sensory-motor processing disturbance in language-disordered children. Assessment and therapeutic techniques are studied. (3-0-3)

SHS 524

Fluency, Dysfluency and Stuttering. Developmental fluency factors are examined with emphasis on differentiation of normal dysfluency from deviant patterns. Theories of causation are related to management of stuttering. Evaluation and therapeutic procedures are examined in conjunction with clinical observation. (3-0-3)

SHS 526

Industrial Audiology. Requirements and evaluation techniques for hearing conservation programs in industry and the community. (3-0-3)

SHS 527

Total Communication. Theories and practical knowledge of oral and manual communication systems for the deaf and hard of hearing. (3-0-3)

SHS 531

Amplification for the Hearing Impaired. Examines the history of hearing aids, techniques for selection of hearing aids, electroacoustic analysis with microprocessors and manikins, government regulations, and delivery systems. (3-0-3)

SHS 533

Aural Rehabilitation. Analysis of techniques and principles of auditory and visual skills to be developed by the deaf and hard of hearing individual from childhood through old age is presented. (4-0-4)

SHS 540

Anatomy and Physiology of the Vocal Mechanism. A study of anatomy and principles of physiology as they relate to the respiratory, phonatory and articulatory aspects of speech. Dissection and laryngeal pathology examined in lab. (3-1-4)

SHS 541

Anatomy, Physiology, and Pathology of the Auditory System. Study of the anatomy and basic principles of physiology as they relate to the auditory system. Diseases and injuries of the hearing mechanism are examined with focus on audiological findings. Lecture and selective observation with otolaryngologists complement classroom topics. (3-0-3)

SHS 542

Electronystagmography. Anatomy and physiology of the vestibular and ocular motor systems and disorders of patients presenting vertiginous symptoms, with emphasis on technique and interpretation of ENG. (3-1-4)

SHS 543

Electrophysiologic Assessment of the Auditory System. Reviews the principles of electrophysiologic testing. Analysis of electrodermal audiometry, heart rate audiometry, electrocochleography, brainstem evoked potentials, and cortical evoked potentials. (3-1-4)

SHS 544

Child Audiology. Investigation of neonatal and childhood auditory disorders, emphasizing various means of evaluation and treatment. (3-0-3)

SHS 551

Diagnostic Methods in Speech-Language Pathology. Examination of evaluative procedures and tests used with children and adults. History gathering and counseling techniques are studied. The student is provided experience in taking histories, test administration and interpretation and counseling. Medical and behavioral evaluative models are critically examined. (4-0-4)

SHS 553

Instrumentation in Hearing and Speech Sciences. A study of the electroacoustical and mechanical principles of instrumentation utilized in the clinical and scientific aspects of audiology and speech-language pathology. Instrumentation is applied in lab. (3-1-4)

SHS 561

Articulation Disorders. A review of phonemic development, classification of articulation impairment, etiologic and theoretic considerations. Contemporary basic and applied research is examined. Evaluative procedures, tests and therapeutic procedures are emphasized. Clinical observation and limited involvement in evaluations are provided. (3-1-4)

SHS 562

Communicative Disorders Associated With Craniofacial Anomalies. In addition to cleft palate and cleft lip, various craniofacial anomalies and associated communicative impairments are studied. Assessment and treatment procedures are presented and supplemented with observation. A segment of the course concerns management of speech and swallowing in head and/or neck cancer patients. Lecture and selective observation with otolaryngologists and pediatricians complement classroom topics. (3-0-3)

SHS 563

Voice Disorders. Symptomology, etiology, diagnosis and treatment of voice disorders are presented. Vocal characteristics, assessment and management of various vocal pathologies are emphasized. Application of spectrographic analysis and EMG biofeedback to hyperfunctional vocal conditions. A segment of the course concerns management of speech and swallowing in head and/or neck cancer patients. Lecture, demonstration and selective observation with otolaryngologists complement classroom topics. (3-0-3)

SHS 564

Aphasia and Other Symbolic Disorders. Course provides historical perspectives. Neurolinguistic disorders are examined from connectionistic and holistic points of view with consideration of contemporary clinical research. Normal process and impairment of swallowing reviewed. Emphasis on clinical assessment, test batteries, and treatment with observational experiences. Lectures, selective observation with neurologists, neurosurgeons and neuropsychologists complement speech-language topics. (3-0-3)

SHS 565

Motor Speech Disorders. Dysarthria associated with central and peripheral nervous system dysfunction is examined from neurophysiological, theoretical and clinical perspectives. Assessment and treatment procedures are emphasized. A segment of the course concerns management of communicative disorders in cerebral palsied individuals with experience at external sites. Lectures, selective observation with neurologists, neurosurgeons and neuropsychologists complement speech topics. (3-0-3)

SHS 566

Pediatric Neurologic Disorders. Assessment and management of communicative disorders associated with neurologic impairments in children. Focus on cerebral palsy, mental retardation, and developmental disabilities in children from birth to age three. Interdisciplinary models for provision of services are studied. (3-0-3)

SHS 572

Psychoacoustics. Advanced psychoacoustics that examines the psycho-physical properties of auditory stimuli beyond content presented in SHS 501. Instrumentation relevant to psychoacoustics research is applied in lab. Prerequisite: SHS 501. (3-1-4)

SHS 575

Issues in Counseling. Medical, psychological and sociologic issues in counseling patients and/or family members of patients with communicative disorders are examined. Practical counseling experience as well as the study of counseling models are provided. (3-0-3)

SHS 590

External Practicum in Speech-Language Pathology. Supervised clinical experience at Rush network hospitals or at cooperating institutions. (v-v-v)

SHS 591

Advanced Clinical Training. Advanced training in speech-language pathology or audiology. (v-v-v)

SHS 592

Seminar in Audiology. Focuses on significant scientific issues in hearing science or audiology. Course work emphasizes development of a major paper or work product and oral presentations. (3-0-3)

SHS 593

Seminar in Speech and Language Pathology. Focuses on significant scientific issues in speech-language science or speech-language pathology. Course work emphasizes development of a major paper or work product and oral presentations. (3-0-3)

SHS 595

External Practicum in Audiology. Supervised clinical experience at Rush network hospitals or at cooperating institutions. (v-v-v)

SHS 598

Thesis. Under the guidance and direction of a faculty member and committee, the student originates, proposes and executes an experiment. These experiments answer significant clinical or basic

research questions and reflect a high degree of scholarship in speech and/or hearing science. (v-0-3)

SHS 599

Independent Study. A creative project designed by the student and supervised by faculty. (v-v-v)

Surgery**SUR 510**

Basic Cardiac Life Support. The purpose of this course is to provide every student with the requisite skills to identify circulatory and/or respiratory arrest and to move immediately to effective and acceptable resuscitative work. Both one-person and two-person techniques will be mastered. The course uses both lectures and personal supervision and makes use of audiovisual aids and adult and infant resuscitative manikins. Reading materials are provided. In addition, personal instruction is given on arrhythmia identification with use of an arrhythmia simulator. WI. [5 hours] Ivankovich.

SUR 601

Clerkship in Surgery. The principles of preoperative and postoperative care, the diagnosis of surgical disease, indications for surgery, and the physiological principles of surgery are stressed through the case study method, consisting of three patients per week. Technical experience is provided in the operating rooms. Daily lectures and conferences provide additional direct contact with faculty. In addition to general surgery, the students choose from available surgical electives to complete the clerkship. Prerequisite: CCS 502. FA, WI, SP, SU. [12 weeks] Doolas.

SUR 602

Surgical Techniques. The course is conducted in the large animal laboratory from 1-5 p.m. on Monday for ten weeks. The objective of the course is to acquaint the surgical student with scrubbing technique, operating room etiquette, gowning, draping, and instrument handling; it provides a basic introduction to fundamental techniques in the various fields of surgery. These include the proper use of instruments, knot-tying, suture handling, arterial and venous cut-downs, tracheostomy, gastrointestinal anastomoses, genitourinary surgery, plastic surgery, and the ethics of the animal laboratory; postoperative follow-up is expected. Prerequisite: SUR 601. FA, WI, SP, SU. [10 weeks] Monson, Haklin.

SUR 604

Advanced Clerkship in Surgery. The student assumes many of the duties and responsibilities of a resident physician. This includes responsibility for preoperative and postoperative care, participation in surgery, and rotating on-call service. The work is primarily with hospitalized patients, with opportunity for ambulatory and elective surgery. Independent library investigative projects are assigned. Prerequisite: SUR 601. FA, WI, SP, SU. [4-12 weeks] Southwick.

SUR 605

Anesthesiology. The program enables medical students to have sufficient instruction in anesthesiology and related topics to develop the following knowledge and skills: recognize the need for and conduct cardiopulmonary resuscitation (CPR); learn airway management; recognize respiratory inadequacy and conduct artificial ventilation with mask and bag; recognize circulatory inadequacy and initiate support of the failing circulation; induce topical and infiltrative anesthesia safely; understand the actions and interactions of depressant and stimulant drugs commonly encountered or used by anesthesiologists; and participate in preoperative evaluation and preparation of surgical and obstetric patients. FA, WI, SP, SU. [4 weeks] Ivankovich.

SUR 606

Clinical Transplantation. The clinical aspects of transplantation, including donor and recipient surgery and preoperative and postoperative care are studied. The student participates in organ preservation as well. Seminars on the fundamental and clinical aspects of transplant immunology are held. Prerequisite: SUR 601. FA, WI, SP, SU. [4-12 weeks] Merkel.

SUR 607

Transplantation Research. The primary emphasis is laboratory research in the animal, perfusion, and immunologic laboratories. The student is responsible for supervised research in organ transplantation, transplant immunology, and other clinically oriented problems. Prerequisite: SUR 601. FA, WI, SP, SU. [12 weeks] Merkel.

SUR 611

Cardiovascular Surgery. This course emphasizes the clinical and laboratory diagnosis of cardiac (both congenital and acquired) and vascular disorders considered for surgical management. Indications for surgery, preoperative evaluation and postoperative care are discussed at patient rounds, in conferences, and on an individualized basis. In addition, ample opportunities are offered for students to observe and, in certain instances, to participate in vascular and open heart surgery. Prerequisite: SUR 601. FA, WI, SP, SU. [4 weeks] Najafi.

SUR 616

Plastic and Reconstructive Surgery. The basic surgical principles of wound care, wound treatment, and general techniques associated with the treatment of acute trauma, burns, lacerations, and blunt trauma are studied. Instruction in the care of acute injury of the hand and basic instruction and diagnosis and treatment of facial and bone fractures will also be included. Experience in suturing animal wounds to be included in the use of animals and actual surgical technique in the emergency room may be included. Prerequisite: SUR 601. FA, WI, SP, SU. [4-8 weeks] Curtin.

SUR 626

Principles of Urology. This clerkship provides further experience in the diagnosis and management of urological problems as a supplement to the basic clerkship in surgery. Opportunities are available to learn the basic diagnostic and therapeutic techniques employed in urology. Prerequisite: SUR 601. FA, WI, SP, SU. [4 weeks] McKiel.

SUR 627

Genitourinary Neoplasia. This course is designed to present the basic concepts of neoplasia, using the genitourinary neoplasms as models. These neoplasms have been selected because collectively they span the entire spectrum of malignancy. The student actively participates in the management of both hospitalized and ambulatory patients. Multidisciplinary seminars and individual projects are available. Departmental approval required. Prerequisite: SUR 601. FA, WI, SP, SU. [4 weeks] Flanagan.

SUR 651

Clinical Orthopedics. The primary emphasis is on examination, diagnosis, pathology, and treatment of conditions affecting the musculoskeletal system. The student participates in clinical work in physicians' offices and hospital facilities such as the cast room and the operating room. Audiovisual materials for the orthopedic library are available. Prerequisite: SUR 601.

SUR 652

Orthopedic Research. Research and bioengineering as applied to the musculoskeletal system are studied with particular emphasis on the pathomechanics of human gait, mechanics of lifting, experimental use of implants in animals and their effects on biologic systems. The research laboratories of the department are available for independent projects and preceptorial work. Prerequisite: SUR 601. FA, SP [8 weeks] Galante.

SUR 654

Hand Surgery. Hand surgery combines techniques of both plastic and orthopedic surgery. Operative technique is broadened by exposure in the office for preoperative selection and postoperative management of patients. A basic reading list will provide the fundamentals, and microsurgical practice in the laboratory will prepare for reconstruction and replantation. Prerequisite: SUR 601. FA, WI, SP, SU. [4 weeks] Schenck.

SUR 656

Clinical Neurosurgery. This clinical clerkship expands upon and demonstrates the practical application of neurological sciences. The emphasis is on diagnosis and pathophysiological correlation of diseases of the nervous system. Practical application of neurosurgical management and diagnosis as well as the treatment of neurosurgical emergencies is studied in detail. Prerequisite: SUR 601. FA, WI, SP, SU. [4 weeks] Whisler.

SUR 657

Principles of Ophthalmic Examination. Under the supervision of the staff, practical instruction is provided in the essentials of ophthalmic examination. Special emphasis is on the proper use of instruments. Prerequisite: CCS 502. FA, WI, SP, SU. [2-4 weeks] Deutsch.

SUR 658

Research in Ophthalmology. Research projects are available for students with a special interest in ophthalmology. Individual projects may be arranged with the department in cooperation with appropriate basic science or clinical departments. Prerequisite: MED 601, SUR 601. FA, WI, SP, SU. [12 weeks] Hughes.

SUR 659

Otolaryngology. Clinical experience is provided in the diagnosis and management of patients with diseases of the ear, nose, throat, head, and neck. Office practice, in addition to the care of hospitalized patients, provides the basis for clinical instruction, with emphasis on case study and proper use of instruments. Departmental pathology, radiology, and otology conferences and journal club are included. A head and neck anatomic instruction course is provided and a multidisciplinary head and neck conference is available. Prerequisite: SUR 601. FA, WI, SP, SU. [4 weeks] Caldarelli.

SUR 661

Surgical Oncology. Concentrated experience in the surgical diagnosis and management of patients with tumors is provided. Correlation of surgical prob-

lems with anatomic and pathological physiology is stressed, including examination of gross and microscopic tissue. Attendance at the tumor clinic, tumor conference, and head and neck tumor conference is required. Prerequisite: SUR 601. FA, WI, SP, SU. [6-12 weeks] Economou.

SUR 670

Speech and Hearing. The course includes an introduction to speech, language and hearing problems. Observation and interaction with patients demonstrating aphasia, dysarthria, stuttering, cleft palate, and developmental speech abnormalities are provided. Experience in interpretation of basic hearing assessment, as well as special auditory tests to differentiate conductive and sensoryneural hearing loss; cochlear and retrocochlear pathology; and nonorganic and organic hearing loss is also provided. Prerequisite: CCS 502. FA, WI, SP, SU. [2-4 weeks] Wolfe.

SUR 671

Thoracic Surgery. The diagnosis, operative, and postoperative care of patients with pulmonary and esophageal disorders are studied in both hospitalized and ambulatory patients. In addition, students assist in patient care, and topics are assigned for discussion. Conferences and independent projects are encouraged. Prerequisite: SUR 601. FA, WI, SP, SU. [4 weeks] Kittle.

FACULTY

Departmental List 155
Alphabetical List 175

Departmental List

ANATOMY

- Clayton, Sheldon P.
Asst. Professor
- *Colgan, James A.
Asst. Professor
- *Dinsmore, Charles E.
Asst. Professor
- *Durica, Thomas E.
Asst. Professor
- Dybas, Linda
Asst. Professor
- *Galante, Jorge O.
Professor
- Gardiner, Richard
Asst. Professor
- Hovde, Christian
Asst. Professor
- *Hughes, W. Franklin
Assoc. Professor
- *Jacob, Susan K.
Asst. Professor
- *Kerns, James M.
Asst. Professor
- Khedroo, Lawrence G.
Asst. Professor
- *Khodadad, Jena
Asst. Professor
- Kuszk, Jerome R.
Instructor
- *Maibenco, Helen
Professor
- Martinek, John J.
Assoc. Professor
- *Schmidt, Anthony
Professor
Chairperson
- *Seale, Raymond
Professor

ANESTHESIOLOGY

- Acuna, Antonio
Asst. Professor
- Andrews, Thomas W.
Assistant
- Applefeld, Jack
Asst. Professor
- Atkins, Edward
Assistant
- Badrinath, Shyamala K.
Asst. Professor
- Boggs, Roy
Assoc. Professor
- Bondoc, Felipe
Associate
- Braverman, Berton
Asst. Professor
- Carroll, Gilbert
Asst. Professor
- Co, Licensia L.
Associate
- Cocadiz, Norval
Instructor
- Devlin, Michael F.
Assistant
- Djordjeovich, Ljubomir
Asst. Professor

- Doncheff, Iwan
Asst. Professor
- Duque, Adoracion
Instructor
- Dziadek, Tadeusz
Assistant
- Ecanow, Bernard
Visit. Professor
- El Ganzouri, Abdel R.
Asst. Professor
- Elbaz, Nabil M. I.
Asst. Professor
- Figel, Mary Ann
Assistant
- Ford, Erica W.
Asst. Professor
- Gallagher, Dru
Instructor
- Garla, Prabhakar G. N.
Asst. Professor
- Gottschalk, William
Professor
- Hahn, Robert
Visit. Asst. Professor
- Havdala, Henri S.
Professor
- Heckel, V. Eileen
Assoc. Professor
- Heller, Floyd N.
Assoc. Professor
- Ibrahim, Tahcin
Assistant
- Ivankovich, Anthony
Professor
Chairperson
- Juaneza, Teresita
Instructor
- Keane, Donal M.
Asst. Professor
- Keh-Wong, Elisa S.
Asst. Professor
- Lai, Joseph C.
Asst. Professor
- Lai, Tai Min
Instructor
- Land, Paul C.
Asst. Professor
- Larson, John M.
Asst. Professor
- Lastres, Enrique J.
Asst. Professor
- Lin, Jui Kuang
Instructor
- Lin, Yuan-Hwai
Instructor
- Logas, William G.
Assistant
- Mady, Vekatgiri
Instructor
- Metha, Mansukh H.
Instructor
- Morch, E. Trier
Emer. Professor
- Movagh, Azar
Instructor
- Murphy, Peter
Assoc. Professor
- Nakrin, Andrew S.
Assistant
- Patel, Kanchan P.
Asst. Professor

- Prasad, Neerukonda
Instructor
- Rhim, Ihn G.
Instructor
- Rose, Raymond F.
Emer. Professor
- Sadove, Max S.
Professor
- Santander, Marc
Asst. Professor
- Seshadri, Kandiur
Instructor
- Shima, Arthur T.
Visit. Professor
- Silins, Astrida I.
Asst. Professor
- Spieß, Bruce D.
Instructor
- Stetson, John B.
Professor
- Styka, Phillip E.
Assistant
- Tennant, Maurice M.
Asst. Professor
- Thomason, Jr., Richard D.
Asst. Professor
- Tio, Diego U.
Associate
- Torres, Albert
Assistant
- Tsai, Houn
Instructor
- Wong, Alfonso
Asst. Professor
- Yelich, Michael
Asst. Professor

BIOCHEMISTRY

- *Anderson, Kenning M.
Assoc. Professor
- Arsenis, Charalampos
Visit. Assoc. Professor
- *Aydelotte, Margaret
Asst. Professor
- *Bezkorovainy, Anatoly
Professor
- Cohen, Maynard
Professor
- *Cole, Edmond
Assoc. Professor
- Demidow, Ludmilla
Instructor
- *Dubin, Alvin
Professor
- *Gotterer, Gerald S.
Assoc. Professor
- Hall, Elizabeth
Asst. Professor
- Harris, Leland
Professor
- *Harrison, William
Professor
- *Hayashi, James A.
Professor
- Hohberger, Leslie
Instructor
- Hoskin, Francis C. G.
Visit. Professor
- Kachmar, John
Assoc. Professor
- *Kimura, James H.
Asst. Professor

- *Kornel, Ludwig
Professor
- *Kuettnr, Klaus E.
Professor
Chairperson
- Kumar, Sudhir
Assoc. Professor
- *Lange, Yvonne
Assoc. Professor
- Lobstein, Otto E.
Assoc. Professor
- Matijevitch, Branislav
Instructor
- *Mattenheimer, Hermann
Professor
- *Morley, Colin
Assoc. Professor
- *Pauli, Bendicht U.
Professor
- *Rafelson, Jr., Max E.
Professor
- *Sandell, Linda
Asst. Professor
- *Schwartz, David
Asst. Professor
- *Sky Peck, Howard H.
Professor
- *Thonar, Eugene
Asst. Professor
- Uhlenhopp, Elliott L.
Asst. Professor
- *Weinstock, Albert
Asst. Professor
- *Whisler, Kenneth E.
Asst. Professor
- Whisler, Walter
Professor

CARDIOVASCULAR

THORACIC SURGERY

- Andersen, James H.
Member
- Anderson, Robert J.
Instructor
- Bojar, Robert
Instructor
- Choudhry, Anwar S.
Instructor
- Da Valle, Michael J.
Instructor
- Davis, Zev
Instructor
- De Laria, Giacomo
Asst. Professor
- De Takats, Geza
Emer. Professor
- Deleon, Serafin
Lecturer
- Dye, Jr., William S.
Professor
- Faber, L. Pentfield
Professor
- Fedorchik, Joseph J.
Instructor
- Garibaldi, Abel
Instructor
- Goldin, Marshall D.
Asst. Professor
- Guillory, Joel
Instructor
- Hoeksema, Tammo
Instructor

List updated as of May 1, 1983.

*Indicates faculty member also has an appointment in The Graduate College.

Hunter, James A.
Professor
Ilbawi, Michel N.
Lecturer
Javid, Hushang
Professor
Jensik, Robert J.
Professor
Julian, Ormand C.
Emer. Professor
King, Jerry N.
Asst. Professor
Kittle, C. Frederick
Professor
Langston, Hiram T.
Visit. Professor
Lewis, H. Michael
Instructor
Milloy, Frank J.
Assoc. Professor
Monson, David O.
Asst. Professor
Najafi, Hassan
Professor
Chairperson
Natale, John J.
Instructor
Oldfield, R. Charles
Asst. Professor
Roberts, Jack C.
Asst. Professor
Serry, Cyrus
Asst. Professor
Spinazzola, Angelo J.
Asst. Professor
Tsai, Eugene
Assoc. Professor
Warren, William H.
Instructor
Weinberg, Jr., Milton
Professor

COMMUNITY HEALTH NURSING

Barhyte, Diana Y.
Assoc. Professor
Carfang, Carol
Associate
Christiansen, Kathryn
Asst. Professor
Assoc. Chairperson
Crane, Marianna L.
Associate
Cukr, Penelope
Asst. Professor
Del Castillo, Susan
Instructor
Dishno, Judy
Asst. Professor
Asst. Chairperson
Duffy, Geraldine M.
Instructor
Fondiller, Shirley
Assoc. Professor
Glantz, Gale
Instructor
Grace, Diane
Instructor
Johnsen, Ruth
Asst. Professor
Kaiser, June
Instructor

Littleton, Marguerite
Asst. Professor
Lower, Helen
Assoc. Professor
Muchow, Elizabeth
Associate
Ninan, Mary
Asst. Professor
Oleske, Denise
Asst. Professor
Padonu, Georgia B.
Assoc. Professor
Chairperson
Pender, Nola
Associate
Rydlowski, Marguerite
Asst. Professor
Sapala, Shirley
Asst. Professor
Shannon, Iris
Assoc. Professor
Sovik, Corinne
Associate
Stypuloski, Ellen
Instructor
Templin, Ruth B.
Associate
Walter, Valre
Associate

DERMATOLOGY

Bielinski, Stefan
Assoc. Professor
Blankenship, Marshall
Assoc. Professor
Budz, Jerome
Instructor
Earles, Rene M.
Instructor
Ertle, James O.
Asst. Professor
Gehlmann, Louisa M.
Asst. Professor
Haeblerlin, Jr., John B.
Emer. Professor
Hanson, Wayne R.
Asst. Professor
Kaplan, Sidney
Assoc. Professor
Keane, John T.
Asst. Professor
Kirschenbaum, M. Barry
Member
Levitt, Leonard
Instructor
Malkinson, Frederick
Professor
Chairperson
Mowbray, David
Assistant
O'Donoghue, Marianne N.
Asst. Professor
Pearson, Roger W.
Professor
Rostenberg, Jr., Adolph
Visit. Professor
Shaw, Steven M.
Assistant
Smith, Edwin M.
Emer. Professor
Spinka, Harold M.
Asst. Professor

Strohl, Lee H.
Asst. Professor
Szymanski, Frederick J.
Professor
Vahl, Raymond
Associate
Vander Laan, Cornelius
Member
Wyhinny, Patricia
Assistant

DIAGNOSTIC RADIOLOGY & NUCLEAR MEDICINE

Adler, Yolanda T.
Assoc. Professor
Alcorn, Franklin
Professor
Ali, Amjad
Assoc. Professor
Asokan, Sangarappila
Asst. Professor
Auer, Roy
Assistant
Bergman, Alan B.
Associate
Bhuva, Bhupendrarai
Associate
Birnholtz, Jason
Professor
Bogdonoff, Maurice L.
Professor
Braun, Thomas W.
Asst. Professor
Briones, Jose B.
Asst. Professor
Buenger, Richard E.
Professor
Chairperson
Capek, Michael
Assistant
Cha, Eung Man
Assoc. Professor
Chandrasekhar, Hema
Asst. Professor
Charters, John R.
Asst. Professor
Chilcote, Jr., Wayne S.
Associate
Choe, Yong Kyui
Associate
Chung-Bin, Anthony
Assoc. Professor
Clark, John W.
Professor
Cook, David
Asst. Professor
Czervionke, Leo F.
Instructor
Davis, F. Steven
Assistant
Davis, Thomas W.
Asst. Professor
Dieschbourg, Janice
Assistant
Dobkin, Gary R.
Assistant
Dooley, Robert D.
Asst. Professor
Dudiak, Christine M.
Assistant
Duman, Bonnie J.
Assistant

Durrell, Charles
Instructor
Edelstein, Barry B.
Asst. Professor
Epstein, Avrum J.
Instructor
Fordham, Ernest W.
Professor
Vice Chairperson
Garbe, Leroy B.
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Associate
Vellody, Kunhunni
Instructor
Vercoe, James L.
Asst. Professor
Wai, William Y.
Instructor
Wallin, Paul E.
Instructor
Wanczyk, Teresa
Assistant
Wang, Josephine
Instructor
Wang, Kuo-Fuh
Instructor
Waskerwitz, Steven
Asst. Professor
Weiss, Mark S.
Instructor
White, Donald R.
Instructor
Wirtshafter, Robert
Asst. Professor
Wong, Paul W.
Professor
Zarrabi, Jalil
Asst. Professor
Zervopoulos, Evangelia
Instructor
Zuckerman, Victor
Assistant

PHARMACOLOGY
Barkin, Robert
Instructor

Bing, Caryn
Assistant
Boyd, Eugene
Instructor
*Carson, Paul E.
Professor
Chairperson
*Ebersman, Donald S.
Professor
*Ecanow, Bernard
Visit. Professor
*Frischer, Henri
Professor
Gdalmn, Louis
Emer. Professor
Geer, Billy W.
Professor
Goetz, Christopher
Asst. Professor
Javaid, Javaid I.
Asst. Professor
*Klawans, Harold
Professor
*MacLeod, Catherine M.
Asst. Professor
Matyas, Jeffrey G.
Instructor
McKenna, Rajalaxmi
Assoc. Professor
*Moon, Byong
Assoc. Professor
Nootens, Raymond H.
Asst. Professor
*Nora, Maris V.
Asst. Professor
O'Donnell, James
Instructor
*Parkhurst, George W.
Asst. Professor
*Prancan, Arthur
Asst. Professor
Reickmann, Karl H. W.
Visit. Professor
Schein, Lonnie G.
Asst. Professor
*Trenholme, Gordon M.
Assoc. Professor
*Weiner, William J.
Assoc. Professor

PHYSIOLOGY
Agarwal, Gyan C.
Visit. Professor
Barclon, Victor
Visit. Professor
Becker, John
Asst. Professor
Braverman, Berton
Asst. Professor
Brueschke, Erich
Professor
*Cohen, Fredric
Asst. Professor
*Donaldson, Sue
Assoc. Professor
Edwards, Joy A.
Instructor
*Eisenberg, Brenda R.
Assoc. Professor
*Eisenberg, Robert
Professor
Chairperson

Fishman, Irving Y.
Professor
Giuffre, Verlin W.
Instructor
*Gottlieb, Gerald L.
Professor
*Hegyvary, Csaba
Assoc. Professor
*Hoeppner, Thomas J.
Asst. Professor
Kroin, Jeffrey S.
Asst. Professor
Levis, Richard A.
Instructor
*Mathias, Richard T.
Assoc. Professor
*Michael, Joel A.
Assoc. Professor
*Nelson, Deborah J.
Asst. Professor
Perlman, Robert
Visit. Professor
*Rae, James L.
Professor
*Rovick, Allen
Professor
*Schauf, Charles
Professor
Smith, Kenneth
Asst. Professor
Yelich, Michael
Asst. Professor
*Zimmerman, Roger P.
Asst. Professor

PLASTIC & RECONSTRUCTIVE SURGERY
Aduss, Howard
Professor
Bradley, Craig
Asst. Professor
Curtin, John W.
Professor
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Dean, Robert K.
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Gold, Henry O.
Associate
Greeley, Paul W.
Emer. Professor
Kurth, Milton E.
Asst. Professor
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Instructor
McCulloch, Alexander
Instructor
McNally, Randall E.
Assoc. Professor
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Reisberg, David J.
Associate
Schenck, Robert R.
Assoc. Professor
Seetapun, Anun
Instructor
Sperling, Richard L.
Associate
Weinrib, Harry P.
Instructor

PREVENTIVE MEDICINE
Betz, Eleanor
Instructor
Chandra, Vijay
Visit. Asst. Professor
Dolecek, Therese
Asst. Professor
Dwarakanathan, Arcot A.
Asst. Professor
Eckenfels, Edward J.
Asst. Professor
Elam, Harry P.
Assoc. Professor
Exum, Dolores
Associate
Grouse, Lawrence D.
Associate
Hahn, Jerome
Assoc. Professor
Hall, Yolanda F.
Asst. Professor
Harris, Alan A.
Assoc. Professor
Hennan, Billie B.
Member
Hudson, Edsel K.
Assoc. Professor
Jones, Jr., Clay H.
Assoc. Professor
Kallick, Charles
Assoc. Professor
Kassriel, Robert S.
Asst. Professor
Klinger, Alfred D.
Associate
Lepper, Mark H.
Professor
Levin, Stuart
Assoc. Professor
Levine, Charlotte C.
Asst. Professor
Levine, Milton D.
Professor
Liebson, Philip R.
Assoc. Professor
Madden, Thomas
Assoc. Professor
McCreary, Patricia A.
Assoc. Professor
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Associate
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Instructor
Nelson, Karen B.
Asst. Professor
Neri, Jr., Gilberto S.
Asst. Professor
Norusis, Marija
Assoc. Professor
Pomerantz, Rhoda S.
Asst. Professor
Post, John
Visit. Asst. Professor
Proteau, Roseanne V.
Asst. Professor
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Asst. Professor
Schoenberger, James A.
Professor
Chairperson
Schoenenberger, Joseph
Asst. Professor

Shekelle, Richard B.
Professor
Sheldon, Stephen H.
Asst. Professor
Shott, Susan
Asst. Professor
Spies, Harold W.
Assoc. Professor
Sunseri, Albert J.
Associate
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Asst. Professor

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Associate
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Carr, Ginger
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Christman, Luther
Professor
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Instructor
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Instructor
Nakamoto, Katherine
Instructor
Nolan, Marietta
Instructor
O'Connor, Rima
Instructor
Price, Paula
Asst. Professor
Roeber, Charlotte
Instructor
Rogers, Carol A.
Asst. Professor
Sivesind, Debra
Instructor
Snyder, Marsha
Asst. Professor
Szczesny, Susan
Instructor
Ulsater-VanLanen, Jane
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Assoc. Chairperson

PSYCHIATRY

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Asst. Professor
Ahluwalia, Kumar Y.
Asst. Professor
Amdur, Mark
Asst. Professor

Anderson, David R.
Asst. Professor
Armstrong, Claresa
Asst. Professor
Arons, Martin
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Bagri, Sushil
Asst. Professor
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Asst. Professor
Benson, David
Asst. Professor
Berendi, Sandor
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Asst. Professor
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Asst. Professor
Buch, Piyush C.
Instructor
Buck, David W.
Asst. Professor
Busch, Katie
Assistant
Carlock, William D.
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Cavanaugh, Jr., James L.
Assoc. Professor
Cavanaugh, Stephanie
Assoc. Professor
Charles, Andrew V.
Instructor
Childress, Barry
Asst. Professor
Chor, Philip N.
Asst. Professor
Christopoulos, Angelos
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Clark, David C.
Asst. Professor
Corbett, Lionel
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Dampitz, Robert E.
Asst. Professor
David, Paul P.
Asst. Professor
De Sa Pereira, E.
Asst. Professor
Dederick, Margarida M.
Asst. Professor
Del Campo, Jose A.
Asst. Professor
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Asst. Professor
Ebenhoeh, Patrick E.
Asst. Professor
Edwards, John H.
Assistant
England, Walter G.
Assistant
Epstein, Phillip S.
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Asst. Professor
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Asst. Professor

Finkelstein, Adrian
Asst. Professor
Foerch, Jeffry
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Asst. Professor
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Instructor
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Assistant
Holinger, Paul C.
Instructor
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Asst. Professor
Jones, Frank A. D.
Asst. Professor
Katz, Jerome I.
Asst. Professor
Kay, Suzanne
Asst. Professor
Kelly, Jonathan
Asst. Professor
Kraines, Samuel H.
Asst. Professor
Kravitz, Howard
Asst. Professor
Kuhl, Dorothy L.
Instructor
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Instructor
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Asst. Professor
Leff, Joel R.
Instructor
Lesser, Jary M.
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Professor
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Asst. Professor
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Instructor
Marohn, Richard
Assoc. Professor
Martinazzo-Dunn, Anna
Instructor
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Emer. Asst. Professor

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Assistant
Mills, Stephanie
Assistant
Morrison, David
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Assoc. Professor
O'Donnell, John W.
Associate
Orloff, Mollie
Assoc. Professor
Patel, Minaldevi
Instructor
Patterson, Joan E.
Asst. Professor
Perkins, George L.
Asst. Professor
Pieper, William J.
Asst. Professor
Pisani, Vincent D.
Asst. Professor
Pollock, George H.
Lecturer
Prosen, Melvin
Assoc. Professor
Rattan, Pradeep
Instructor
Reddy, Kurapati B.
Instructor
Reifman, Robert A.
Asst. Professor
Reinstein, Michael J.
Asst. Professor
Ripeckyj, Andrew
Asst. Professor
Rogers, Richard
Asst. Professor
Rosenthal, Maurice J.
Asst. Professor
Rosenthal, Ruth B.
Instructor
Sabelli, Hector C.
Asst. Professor
Samelson, Charles F.
Asst. Professor
Sanchez, Jose R.
Asst. Professor
Schaff, Mary R.
Assistant
Scheftner, William A.
Asst. Professor
Schwarz, Marvin
Asst. Professor
Smith, Garth D.
Asst. Professor
Sokhey, B. J.
Associate
Solomon, Alfred P.
Professor
Sommerville, Lorraine
Assistant
St. Pierre, Aimee C.
Assistant
Steed, W. David
Assoc. Professor
Stein, Edward
Asst. Professor

Strozier, Charles P.
Visit. Asst. Professor

Sytsma, John
Associate

Thampy, Kishore J.
Asst. Professor

Thompson, Dennis S.
Instructor

Tilkin, Jeffrey M.
Asst. Professor

Trager, Eugene P.
Asst. Professor

Trakas, Demetrius A.
Asst. Professor

Trujillo, Jamie
Asst. Professor

Vazquez, Juan J.
Asst. Professor

Voltolina, Eugene J.
Instructor

Waldman, Maurice
Asst. Professor

Wasyliw, Orest
Asst. Professor

Watson, Laura H.
Instructor

Weiner, Barbara
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West, James W.
Asst. Professor

Westheimer, Ruth
Asst. Professor

Wettstein, Robert
Asst. Professor

Wolf, Marion E.
Asst. Professor

Wolfe, John R.
Professor

Wright, Donovan G.
Professor

Yballe, Sonia B.
Asst. Professor

Young, Michael
Asst. Professor

Zadylak, Robert G.
Asst. Professor

PSYCHOLOGY & SOCIAL SCIENCES

***Anderson, David R.**
Asst. Professor

Bacon, Lynd
Asst. Professor

***Bieliauskas, Linas**
Assoc. Professor

***Billingham, Katherine**
Asst. Professor

Brenner, Lisa P.
Asst. Professor

***Brocken, Cecilia**
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***Cartwright, Rosalind D.**
Professor
Chairperson

***Cheifetz, David I.**
Professor

Christman, Luther
Professor

Clark, David C.
Asst. Professor

Como, Peter G.
Assistant

***Counte, Michael**
Assoc. Professor

Dawkins, Marva
Asst. Professor

***de Toledo-Morrell, L.**
Assoc. Professor

Exum, Dolores
Associate

***Feldman, Howard S.**
Asst. Professor

***Garron, David C.**
Professor

Gordon, Laura B.
Asst. Professor

Gorman, William
Asst. Professor

***Guise, Gracia**
Asst. Professor

***Hegyvary, Sue**
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Hotch, Deborah
Asst. Professor

Houser, Henry P.
Professor

***Johnson, Marilyn A.**
Asst. Professor

Johnson, Paul
Asst. Professor

***Kolotkin, Ronette**
Asst. Professor

Kravitz, Howard
Instructor

***Leavitt, Frank**
Assoc. Professor

***Lilie, Jamie K.**
Asst. Professor

Linsky, Miles A.
Asst. Professor

Lloyd, Stephen R.
Instructor

Lofgren, Katharine A.
Asst. Professor

***Lopez, Martita**
Asst. Professor

McNamara, Barry T.
Asst. Professor

***Mead, John D.**
Asst. Professor

Miller, Robert B.
Asst. Professor

Moncrieff, Ellsworth H.
Associate

***Nelson, Michael N.**
Asst. Professor

Padonu, Georgia B.
Asst. Professor

Pahel, Kenneth R.
Assoc. Professor

***Pavlou, Marcia**
Asst. Professor

Pisani, Vincent D.
Asst. Professor

***Rebesco, Marguerite P.**
Asst. Professor

***Rogers, Richard**
Asst. Professor

Rubenstein, Susan
Instructor

***Salloway, Jeff**
Assoc. Professor

Sawyer, Thomas F.
Visit. Asst. Professor

***Schneider, Anne S.**
Asst. Professor

Schoenenberger, Joseph
Asst. Professor

Synder, Darrell
Asst. Professor

***Stearns, Amy E.**
Asst. Professor

Stephens, Alice E.
Asst. Professor

Tellis-Nayak, V.
Visit. Assoc. Professor

Wasyliw, Orest
Asst. Professor

Watson, Laura H.
Instructor

***Weber, Steven**
Asst. Professor

***Wilson, Robert S.**
Asst. Professor

Young, Michael
Asst. Professor

Younger, Joel B.
Instructor

***Zeldow, Peter**
Asst. Professor

Zitter, Robert E.
Asst. Professor

Zusman, Martin
Visit. Assoc. Professor

RELATED HEALTH PROGRAMS

Allan, Joan
Instructor

Anderson, Karen A.
Instructor

Armstrong, Michael K.
Asst. Professor

Atkins, Martha F.
Instructor

Ayers, Winifred M.
Asst. Professor

Bacon, Mary
Asst. Professor

Barrett, Jean E.
Instructor

Barton, Sara J.
Visit. Instructor

Beckerman, Andrea G.
Instructor

Bell, Virginia
Instructor

Benjamin, Sharon
Lecturer

Berlow, Susan J.
Instructor

Betz, Eleanor
Instructor

Bezkorovainy, Anatoly
Assoc. Professor

Bishop, Catherine L.
Instructor

Brady, Catherine
Instructor

Castellanos, Mary
Asst. Professor

Chapman, Kristine A.
Instructor

Chung-Bin, Anthony
Assoc. Professor

Demidow, Ludmilla
Instructor

Detweiler, Glenn L.
Instructor

Dolecek, Therese
Asst. Professor

Druker, Robert
Visit. Assoc. Professor

Edwards, Bruce
Visit. Instructor

Farag, Wadia
Instructor

Fekete, Agnes E.
Asst. Professor

Gernhofer, Niki A.
Instructor

Gewurz, Anita
Asst. Professor

Gvazdinskas, Loretta C.
Instructor

Hall, Yolanda F.
Asst. Professor

Hanson, Wayne R.
Asst. Professor

Hassel, Maria
Instructor

Hendrickson, Frank R.
Professor

Hill, David
Visit. Instructor

Ho, Li O.
Instructor

Hughes, Cynthia J.
Asst. Professor

Hullings-Kalina, Judy
Visit. Instructor

Jette, David
Asst. Professor

Jones, J. Lyndelle
Visit. Instructor

Kaplan, Raymond L.
Asst. Professor

Kartha, Ponnunni K. I.
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Klodd, David A.
Asst. Professor

Klor, Barry M.
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Kolodziej, Cynthia
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Kominsky, Perrie
Visit. Instructor

Krause, Sue Ellen
Asst. Professor

Krueger, Charlotte
Asst. Professor

Kuljis, Laurie C.
Instructor

Lanzl, Lawrence
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Lee, Myung-Sook
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Maczulski, Jo Anne
Instructor

Maedel, Lynn
Asst. Professor

Mansfield, Margo
Asst. Professor

Melnick, Carol R.
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Milanti, Franklin
Visit. Asst. Professor

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 Asst. Professor
Murthy, Anantha K.
 Assoc. Professor
Neidich, Robin D.
 Visit. Instructor
Nichols, Dickronouhi
 Instructor
Novak, Elaine
 Instructor
O'Brien, Roberta J.
 Instructor
Olson, Linda G.
 Lecturer
Opacich, Karin J.
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Patterson, Robert
 Instructor
Pierleoni, Robert G.
 Professor
 Chairperson
Pinney, E. Virginia
 Asst. Professor
Ratusnik, David L.
 Assoc. Professor
Rosenthal-Schall, W.
 Visit. Instructor
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 Assoc. Professor
Schewitz, Shelia
 Asst. Professor
Schroder-Kearn, C.
 Instructor
Shover, James D.
 Instructor
Siegel, Joan
 Asst. Professor
Sood, Naresh
 Lecturer
Sowa, Diane
 Instructor
Stallings, Susan
 Asst. Professor
Stoioff, Madonna
 Asst. Professor
Stumpe, Marjorie
 Instructor
Tangney, Christine
 Asst. Professor
Van Hoorebeke, Kala
 Instructor
Viernes, Ann L.
 Instructor
Wachtor, Thomas E.
 Asst. Professor
Walasek, Joan A.
 Instructor
Walens, Debbie
 Instructor
Weddle, Dian
 Asst. Professor
Weissberger, Lynne E.
 Asst. Professor
White, Jeanette
 Instructor
Williams, Denise E.
 Lecturer
Wolgemuth, Christine L.
 Instructor
Yacullo, William S.
 Asst. Professor

Yoshizawa, Ellen H.
 Instructor
Young, Carolyn
 Visit. Professor

RELIGION & HEALTH

Burck, Russell
 Asst. Professor
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 Asst. Professor
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 Assoc. Professor
Hovde, Christian
 Assoc. Professor
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Laaser, Mark R.
 Asst. Professor
Mervis, Leonard J.
 Asst. Professor
Temming, M. Carole
 Instructor
Wagner, William A.
 Asst. Professor

SURGICAL NURSING

Alfredson, Janet
 Instructor
Appenheimer, Linda
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Bell, Alison
 Instructor
Bravo, Mariana
 Instructor
Bremer, Catherine
 Associate
Brozenec, Sally
 Instructor
Burn, Elizabeth
 Associate
Burns, Carol
 Instructor
Cladek, Lydia I.
 Associate
Clark, Constance
 Instructor
Clemmings, Linda
 Asst. Professor
Coren, Debra A.
 Instructor
Daniel, Evelyn
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Dauro-Jokich, Cheryl R.
 Instructor
Doyle, James P.
 Instructor
Duffy, Catherine M.
 Associate
Faut, Mary
 Associate
Firlit, Sharon L.
 Asst. Professor
Forsyth, Garyfallia
 Assoc. Professor
Fraulini, Kay
 Instructor
Goodman, Michelle
 Asst. Professor
Griffin, Karen T.
 Instructor
Groszek, Donna
 Asst. Professor

Haggerty, Linda M.
 Instructor
Hastings, Sue M.
 Instructor
Holmes, Aline M.
 Associate
Jankowski, Mary Ellen
 Associate
Javid, Liana B.
 Instructor
Keithley, Joyce
 Asst. Professor
 Assoc. Chairperson
Laman, Patricia E.
 Instructor
Lanigan, Kathleen
 Instructor
Lanuti, Noreen
 Instructor
Lauder, Winifred T.
 Instructor
Llewellyn, Jane G.
 Asst. Professor
 Asst. Chairperson
Lyons, Rita
 Asst. Professor
Matz, Stephen D.
 Instructor
McCaughy, Marcia
 Associate
Miller, Nancy J.
 Instructor
Morreale, Barbara A.
 Instructor
Moss, Patricia
 Instructor
Moyer, Karen
 Associate
Nachich-Scheid, Tina
 Instructor
Nelson, Joan C.
 Instructor
Paice, Judith A.
 Instructor
Pairitz, Donna M.
 Instructor
Parker, Stephanie
 Associate
Patras, Angie
 Asst. Professor
Podjasek, Jill
 Instructor
Poulson, Elizabeth
 Instructor
Randall-Andrews, Diane
 Instructor
Resh, Carol
 Instructor
Rovtar, Julie
 Instructor
Saclarides, Elena
 Instructor
Savoy, Suzanne
 Instructor
Schillo, Richard
 Instructor
Shannon, Carol J.
 Associate
Sigg, Lisa V.
 Instructor
Slack, Jeanne F.
 Instructor

Stoops, Joyce
 Associate
Tarnow, Jane
 Asst. Professor
Thomas, Charlene
 Instructor
Tyszka, Margaret F.
 Instructor
Urbanski, Pamela
 Instructor
Vogler, Robert
 Instructor
 Assoc. Chairperson
Voluz, Joan
 Instructor
Walsh, Marian H.
 Instructor
Williamson, Patricia
 Instructor

THERAPEUTIC RADIOLOGY

Awan, Azhar M.
 Assistant
Chung-Bin, Anthony
 Assoc. Professor
Cox, Richard S.
 Asst. Professor
Gagnon, James D.
 Asst. Professor
Hanson, Wayne R.
 Asst. Professor
Hendrickson, Frank R.
 Professor
 Chairperson
Hill, Colin
 Instructor
Jette, David
 Asst. Professor
Kartha, Ponnunni K. I.
 Assoc. Professor
Khosla, Subhash
 Assistant
Kiel, Krystyna D.
 Asst. Professor
Kooser, Judith A.
 Assistant
Kramer, Toby
 Asst. Professor
Krishnasamy, S.
 Assistant
Kurup, Parvathy
 Instructor
Lanzl, Lawrence
 Professor
Lee, Ham Nyung
 Asst. Professor
Lee, Myung-Sook
 Assoc. Professor
Liu, Shin S.
 Asst. Professor
Mengeot, Michel M.
 Asst. Professor
Murthy, Anantha K.
 Assoc. Professor
Pedapati, Prakash
 Asst. Professor
Phillips, Richard L.
 Visit. Assoc. Professor
Rao, A. R.
 Assistant
Reddy, Salitha
 Asst. Professor

Rozenfeld, Martin

Assoc. Professor

Sarin, Pramilla

Asst. Professor

Saroja, K. R.

Assistant

Saxena, Virenda S.

Professor

Schabinger, Paul

Instructor

Stefani, Stefano S.

Professor

UROLOGY

Babanoury, Agha B.

Asst. Professor

Baumgartner, George C.

Asst. Professor

Borkovec, Kent F.

Associate

Buckun, George R.

Associate

Burkholder, Theodore M.

Member

Callahan, Daniel H.

Assoc. Professor

Cottrell, Jr., Thomas L.

Assistant

Cottrell, Thomas L. C.

Visit. Asst. Professor

Curl, George G.

Asst. Professor

De Marco, Carl J.

Instructor

Eghrari, Faramarz

Instructor

Ekbal, Shahid S.

Asst. Professor

Evans, Thomas A.

Asst. Professor

Firlit, Robert

Instructor

Flanagan, Malachi J.

Professor

Gernon, John T.

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Associate

Graf, Edwin C.

Professor

Guinan, Patrick

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Haeger, R. Ross

Assoc. Professor

Hoeksema, Jerome

Asst. Professor

Hoyme, Kermit

Instructor

Jiminez, Luis A.

Assistant

Kovacs, Joseph

Asst. Professor

Lief, Matthew S.

Assistant

Lipshitz, Sam

Instructor

McKiel, Jr., Charles F.

Professor

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Emer. Professor

Papierniak, Frank B.

Assoc. Professor

Pessis, Dennis A.

Asst. Professor

Rooney, Peter

Instructor

Sadoughi, Nader

Assoc. Professor

Sosenko, George R.

Instructor

Strzyz, James

Instructor

Sullivan, James D.

Assoc. Professor

Tsou, Richard

Assistant

Valenta, James C.

Assoc. Professor

Weinstein, Robert J.

Instructor

Zimmerman, Robert D.

Instructor

Alphabetical List

The following list includes self-reported data on the highest degree, and university conferring that degree, plus the department(s) in which the faculty member has an appointment and, if applicable, network hospital affiliation.

Alphabetical Listing Abbreviations

(no abbreviation indicates Rush-Presbyterian-St. Luke's Medical Center)

BETH	Bethany Hospital	MLSQ	Mile Square Health Center, Inc.
CDH	Central DuPage Hospital	MTSN	Mt. Sinai Hospital Medical Center
CH	Christ Hospital	SKVH	Skokie Valley Hospital
COMM	Community Memorial General Hospital	SMAR	St. Mary's Hospital
COPL	Copley Memorial Hospital	SWED	Swedish Covenant Hospital
GBUR	Galesburg Cottage Hospital	WSUB	West Suburban Hospital Medical Center
GRNT	Grant Hospital of Chicago		

Academic Degree:

A.B.; B.A.	Bachelor of Arts
B.D.	Bachelor of Divinity
B.S.	Bachelor of Science
D.D.	Doctor of Divinity
D.Min.	Doctor of Ministry
D.D.S.	Doctor of Dental Surgery
D.N.Sc.	Doctor of Nursing Science
D.O.	Doctor of Osteopathy
Dr.PH.	Doctor of Public Health
D.V.M.	Doctor of Veterinary Medicine
Ed.D.	Doctor of Education
J.D.; L.L.B.	Doctor of Law
M.A.	Master of Arts
M.B.A.	Master of Business Administration
M.B., B.Ch.	Bachelor of Medicine/Bachelor of Chirurgy
M.B.B.S.	Bachelor of Medicine/Bachelor of Surgery
M.C.D.	Master of Communications Disorders
M.D.	Doctor of Medicine
M.H.A.	Master of Hospital Administration
M.M.	Master of Management
M.N.	Master of Nursing
M.O.T.	Master of Occupational Therapy
M.P.H.E.	Master in Public Health Education
M.S.	Master of Science
M.S.Ed.	Master of Science in Education
M.S.I.E.	Master of Science in Industrial Engineering
M.S.N.	Master of Science in Nursing
M.S.W.	Master of Social Work
Pharm.D.	Doctor of Pharmacy
Ph.D.	Doctor of Philosophy
Psy.D.	Doctor of Psychology
Th.M.	Master of Theology

Note:

- Lowell Technological Inst. is now the U. of Lowell
- Chicago-Kent College of Law merged with I.I.T. in 1969
- Chicago Med. Sch. is now the U. of H.S./Chicago Med. Sch.
- Rush Med. Col. degrees were conferred by The U. of Chicago through 1941
- Sch. of Med. of Marquette U. is now Med. Col. of Wi.
- Woman's Med. Col. is now Med. Col. of Phila.
- M.D. degrees conferred by the U. of I. were conferred by the U. of I. at Urbana until 1973; by the U. of I. at the Med. Ctr. until September, 1982; by the U. of I. at Chicago thereafter
- Jefferson Med. Col. of Phila. is now part of Thomas Jefferson U.

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- Acord, Lea**
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- Barton, Evan M.**
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M.D., Philippine Is.
Ped.

Mandel, Elias

B.S., McGill U.
Ped. (CH)

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Psychi.

Mansfield, Margo

M.A., Roosevelt U.
Rel. Hlth. Prg.

Mar, Calvin Moy

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Int. Med. (CH)

Marchini, Alejandro

M.D.
Ped.

Marchmont-Robinson, H.

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Int. Med.

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Int. Med.

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M.D., U. of Southern Ca.
Psychi.
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- Moss, Percy C.**
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Ob. & Gyne.
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Dermatology
- Moyer, Karen**
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- Schajowicz, Fritz**
M.D., Argentina
Pathology, Ortho. Surg.
- Schatz, David R.**
M.D., Chicago Med. Sch.
Int. Med. (MTSN)
- Schauf, Charles**
Ph.D., U. of Chicago
Physiol., Neuro. Sci.
- Schechter, Esther M.**
Ph.D., U. of Chicago
Im. & Micr.
- Scheer, Steven J.**
M.D., Northwestern U.
Ortho. Surg. (MTSN)
- Scheetz, Annette A.**
M.D., U. of I. at Chicago
Int. Med. (MTSN)
- Scheftner, William A.**
M.D., U. Wi.-Madison
Psychi.
- Schein, Lonnie G.**
Ph.D., West Virginia U.
Pharmacology
- Scheiner, David L.**
M.D., Columbia U.
Prev. Med., Int. Med.
- Schenck, Robert R.**
M.D., U. of I. at Chicago
Pls. & Rec. Surg., Ortho. Surg.
- Schenk, Alan G.**
M.D., U. of I. at Chicago
Ophthalmology
- Schenk, Robert K.**
M.D., Switzerland
Ortho. Surg., Pathology
- Scheribel, Karl**
M.D., Loyola U. of Chicago
Ophthalmology
- Schewitz, Lionel J.**
M.B., B.Ch., Witwatersrand U., South Africa
Ob. & Gyne.
- Schewitz, Shelia**
M.A., Northwestern U.
Oto. & Bronc., Rel. Hlth. Prg.
- Schick, Armin F.**
M.D., U. of Chicago
Int. Med.
- Schick, Vernon F.**
M.D., Rush Med. Col.
Int. Med. (CH)
- Schillo, Richard**
M.S., Rush U.
Surg. Nsg.
- Schlecht, Hans W.**
M.D., Austria
Fam. Prac. (GRNT)
- Schlesinger, Marc L.**
M.D., Loyola U. of Chicago
Int. Med. (COPU)
- Schmidt, Anthony**
Ph.D., Princeton U.
Anat.
- Schmidt, Paul J.**
M.D., Rush U.
Int. Med.
- Schmidt, Ronald T.**
M.A., Lateran U., Italy
Hlth. Sys. Mngemnt.
- Schmidtke, Wendell H.**
M.D., Northwestern U.
Gen. Surg.
- Schmitz, Karan A.**
M.S.N., U. of I. at Chicago
Ob. & Gyne. Nsg.
- Schneider, Anne S.**
Ph.D., Northern Illinois U.
Psych. & Soc. Sci.
- Schneider, Catherine A.**
M.S., Rush U.
Geront. Nsg.
- Schneider, Patricia A.**
M.S., U. of I. at Chicago
Ob. & Gyne. Nsg.
- Schoenberger, James A.**
M.D., U. of Chicago
Prev. Med., Int. Med.
- Schoenenberger, Joseph**
Ph.D., Florida St. U.
Psych. & Soc. Sci., Prev. Med.
- Schreiber, Nancy**
M.S.N., Loyola U. of Chicago
Medical Nsg.
- Schreiber, Solomon**
M.D., New York U.
Pathology (CH)
- Schroder-Kearn, C.**
B.S., U. Wi.-Madison
Rel. Hlth. Prg.
- Schuessler, Roger R.**
M.D., Washington U.
Int. Med.
- Schuetz, John N.**
M.D., U. Budapest, Hungary
Ob. & Gyne.
- Schuh, Daniel R.**
M.B.A., U. of Chicago
Hlth. Sys. Mngemnt.
- Schulte, Eric**
M.D., Northwestern U.
Int. Med.
- Schultz, Albert B.**
Ph.D., Yale U.
Ortho. Surg.
- Schultz, Stephen M.**
M.D., U. of Mn. of Mnpl. St. Paul
Int. Med.
- Schuytema, Eunice E.**
Ph.D., U. of Iowa
Im. & Micr.
- Schwartz, David**
Ph.D., Chicago Med. Sch.
Biochem.
- Schwartz, Donald P.**
M.D., U. of Med. & Dent. of N. J.
Ped.

- Schwartz, Maurice A.**
M.D., U. of I. at Urbana
Int. Med. (MTSN)
- Schwartz, Melvin M.**
M.D., U. of Mn. of Mnpl. St. Paul
Pathology
- Schwartz, Michael R.**
M.D., New York U.
Neuro. Sci. (CH)
- Schwartz, Theodore B.**
M.D., Johns Hopkins U.
Int. Med.
- Schwartzman, William A.**
M.D., U. of Southern Ca.
Int. Med.
- Schwarz, Marvin**
M.D., Wayne St. U.
Psychi.
- Schwer, William**
M.D., U. of I. at Chicago
Fam. Prac. (CH)
- Sciarretta, S. A.**
M.D., Loyola U. of Chicago
Oto. & Bronc.
- Scupham William K.**
M.D., Northwestern U.
Int. Med.
- Seale, Raymond**
Ph.D., U. of Mn. of Mnpl. St. Paul
Anat.
- Secemsky, Solomon**
M.D.
Int. Med.
- Seetapun, Anun**
M.D., Thailand
Pls. & Rec. Surg. (CH)
- Segreti, John**
M.D., Rush U.
Int. Med.
- Seidman, Leon**
M.D., Rush Med. Col.
Gen. Surg. (MTSN)
- Seim, Sandra K.**
M.B.A., U. of Chicago
Pathology
- Seker, Jr., Shanti J.**
M.B.B.S., India
Ped. (MTSN)
- Sella, Michael Z.**
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Neuro. Sci., Ped.
- Semprevivo, Diane**
M.S., U. Pittsburgh
Ob. & Gyne. Nsg.
- Serratto, Maria**
M.D., Italy
Ped.
- Serry, Cyrus**
M.D., Tehran U., Iran
Cv. T. Surg.
- Seshadri, Kandiyyur**
M.B.B.S., Osmania Med. Col., India
Anesthes. (CH)
- Shafer, Sidney J.**
M.D., U. of I. at Chicago
Ortho. Surg.
- Shah, Ila Ashok**
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Ped. (CH)
- Shah, Jagdish R.**
M.D., India
Int. Med. (MTSN)
- Shahinpour, Nayereh**
M.S.N., Wayne St. U.
Medical Nsg.
- Shallat, Charles H.**
M.D., U. of I. at Chicago
Int. Med.
- Shannon, Carol J.**
M.S.N., Loyola U. of Chicago
Surg. Nsg. (MTSN)
- Shannon, Iris**
M.S., U. of Chicago
Community Hlth. Nsg.
- Shannon, Kathleen**
M.D., Rush U.
Int. Med.
- Shapiro, Jules S.**
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Ortho. Surg.
- Shariff, Nayeem**
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Fam. Prac. (CH)
- Sharma, Rajesh**
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Int. Med.
- Sharma, Sudarshan**
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Ob. & Gyne.
- Sharon, Greg E.**
M.D., Rush U.
Int. Med.
- Sharon, Zeev**
M.D., Israel
Int. Med.
- Shaw, Steven M.**
M.D., U. of Arizona
Dermatology
- Shearon, Kenneth**
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- Sheinkop, Mitchell B.**
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- Shekarloo, Afrasiab**
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Ob. & Gyne.
- Shekelle, Richard B.**
Ph.D., U. of Chicago
Prev. Med.
- Shekleton, Maureen**
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Medical Nsg.
- Sheldon, Stephen H.**
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Ped., Prev. Med.
- Shelley, Sandra**
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- Sherin, Kevin**
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- Sheth, Nita N.**
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M.D., U. of I. at Chicago
Int. Med.
- Shidler, Helen M.**
M.S., Rush U.
Medical Nsg.
- Shima, Arthur T.**
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Anesthes. (WSUB)
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M.D.
Int. Med.
- Shivde, Anuradha J.**
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- Shivde, Pinakini S.**
M.D., India
Ped. (CH)
- Schmigelsky, Irene**
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Ped.
- Shobris, Martin**
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Fam. Prac. (CH)
- Shorey, William D.**
M.D., Harvard U.
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- Shorr, Gail J.**
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Ped.
- Shott, Susan**
Ph.D., U. of Chicago
Prev. Med.
- Shover, James D.**
B.S., Western I. U.
Rel. Hlth. Prg.
- Showel, John L.**
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Int. Med.
- Shrock, Peter**
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Gen. Surg., Ped.
- Shroff, Subodh S.**
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Int. Med. (MTSN)
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- Sidell, Michael S.**
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Di. Rad. & Nuc. Med. (GBUR)
- Sidell, Richard**
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- Siegfried, J. David**
M.D., U. of I. at Chicago
Int. Med. (COPL)
- Sigg, Lisa V.**
M.S., Rush U.
Surg. Nsg.
- Siglin, Martin G.**
M.D., Rush U.
Int. Med.
- Silins, Astrida I.**
M.D., Christian-Albrecht U., German
Anesthes.
- Silins, V. Raymond**
M.D., Latvia
Int. Med.
- Silver, Bruce A.**
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Di. Rad. & Nuc. Med.
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Int. Med.

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M.D.
Int. Med.
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Ob. & Gyne. (MT&N)
- Singh, Pavitar**
M.D., India
Di. Rad. & Nuc. Med. (COPL)
- Singh, Rama S.**
M.D., India
Ped.
- Sinioris, Marie E.**
M.P.H., U. of I. at Chicago
Hlth. Sys. Mngemnt.
- Sipkins, James H.**
M.D., U. of Mn. of Mnpl. St. Paul
Int. Med.
- Sirijintakorn, Pakorn**
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Di. Rad. & Nuc. Med. (MTSN)
- Sittler, Stephen S.**
M.D., Case Westn. Reserve U.
Int. Med. (CH)
- Sivertsen, Lynn**
M.S.N., U. of I. at Chicago
Geront. Nsg.
- Sivesind, Debra**
M.S.N., U. of Nebraska Med. Ctr.
Psychi. Nsg.
- Skul, Vesna**
M.D., Rush U.
Int. Med.
- Sky Peck, Howard H.**
Ph.D., U. of Southern Ca.
Biochem.
- Slack, Jeanne F.**
M.S., Rush U.
Surg. Nsg.
- Slayton, Robert E.**
M.D., U. of Chicago
Int. Med.
- Slezak, George C.**
M.D., U. of I. at Chicago
Gen. Surg. (COMM)
- Slodki, Sheldon**
M.D., U. of I. at Chicago
Int. Med. (MTSN)
- Smalheiser, Susan**
M.S.N., CUNY Hunter Col.
Med. Nsg.
- Smith, Claire**
M.D., Loyola U. of Chicago
Di. Rad. & Nuc. Med.
- Smith, Connie**
M.S., Rush U.
Medical Nsg.
- Smith, Daniel J.**
M.D., Rush U.
Int. Med.
- Smith, Earl C.**
M.D., U. Pittsburgh
Int. Med. (MTSN)
- Smith, Edwin M.**
M.D., Northwestern U.
Dermatology
- Smith, Florence A.**
M.D., U. Pittsburgh
Ob. & Gyne. (CH)
- Smith, Garth D.**
M.D., Northwestern U.
Psychi.
- Smith, Horace E.**
M.D., U. of I. at Chicago
Ped.
- Smith, Joyce M.**
M.D., U. of I. at Chicago
Ped.
- Smith, Kenneth**
Ph.D., Inst. Neurol. U., U. K.
Physiol.
- Smith, Xavier P.**
M.S., Rush U.
Medical Nsg.
- Snapp, Marshall**
M.D., U. Va.
Int. Med.
- Snead, Robin Dale**
M.D.
Int. Med.
- Snyder, III, Edward J.**
M.D.
Gen. Surg.
- Snyder, Darrell**
Ph.D., U. of S. D.
Psych. & Soc. Sci. (MLSQ)
- Snyder, Leonard**
M.D., Northwestern U.
Gen. Surg. (COPL)
- Snyder, Marsha**
M.S.N., U. of I. at Chicago
Psychi. Nsg.
- Snyder, Sheryl P.**
M.D., U. of I. at Chicago
Pathology
- Sobin, W. Harley**
M.D., New York U.
Int. Med. (MTSN)
- Sochacki, Stacy L.**
M.S., SUNY at Buffalo
Hlth. Sys. Mngemnt.
- Sodetz, Richard A.**
M.D., U. of I. at Chicago
Ortho. Surg. (CH)
- Sokalski, Steven J.**
D.O., Chicago Col. Osteo. Med.
Int. Med. (CH)
- Sokhey, B. J.**
M.B.B.S., U. of Rangoon, Burma
Psychi. (CH)
- Sokol, Norton M.**
M.D., U. of I. at Chicago
Int. Med. (MTSN)
- Solliday, Norman H.**
M.D., U. of Chicago
Int. Med. (CH)
- Solomon, Alfred P.**
M.D., U. of I. at Chicago
Psychi.
- Somberg, Alvin**
M.D., Yale U.
Int. Med. (SWED)
- Sommerfeldt, Lorraine**
M.D., Rush U.
Psychi.
- Sompalli, P. Naidu**
M.B.B.S., India
Gen. Surg. (MTSN)
- Sood, Naresh**
B.S., India
Rel. Hlth. Prg.
- Sophie, Laurie**
M.S.N., U. of I. at Chicago
Medical Nsg.
- Sorrells-Jones, Jean**
M.S., U. of Co. H.S. Ctr.
Ped. Nsg.
- Sosenko, George R.**
M.D., Chicago Med. Sch.
Urology
- Southwick, Harry W.**
M.D., Harvard U.
Gen. Surg.
- Sovik, Corinne**
M.S., Rush U.
Community Hlth. Nsg.
- Sowa, Diane**
M.B.A., DePaul U.
Rel. Hlth. Prg.
- Spaeth, Ralph**
M.D., Case Westn. Reserve U.
Ped. (CH)
- Sperling, Richard L.**
M.D., U. of I. at Chicago
Pls. & Rec. Surg. (SKVH)
- Spies, Harold W.**
M.D., George Washington U.
Prev. Med.
- Spiegs, Bruce D.**
M.D., Rush U.
Anesthes.
- Spinazzola, Angelo J.**
M.D., U. of I. at Chicago
Cv. T. Surg. (CH)
- Spindel, David**
M.D., Chicago Med. Sch.
Ophthalmology (MTSN)
- Spinka, Harold M.**
M.D., Chicago Med. Sch.
Dermatology (CH)
- Spiro, Barbara**
M.D., U. of Berne, Switzerland
Ophthalmology
- St. Pierre, Aimee C.**
M.D., Rush U.
Psychi.
- Staats, David O.**
M.D., U. of Chicago
Int. Med. (MTSN)
- Stack, Caryn**
M.D., Loyola U. of Chicago
Di. Rad. & Nuc. Med.
- Stafford, James L.**
M.D.
Int. Med.
- Stagno, Anthony**
M.D., U. of Bologna, Italy
Ob. & Gyne.
- Staisz-Baczek, Maria**
M.D., Poland
Ped. (MTSN)
- Stallings, Susan**
M.S., Boston U.
Rel. Hlth. Prg.
- Stamler, Jeremiah**
M.D.
Int. Med.
- Stankevych, George**
M.D., U. Guadalajara, Mexico
Ob. & Gyne.
- Stanley, Robert E.**
M.D., U. of I. at Chicago
Int. Med.
- Starsiak, Casimir R.**
M.D., Loyola U. of Chicago
Di. Rad. & Nuc. Med. (CH)

- Stavinga, Ronald E.**
M.D., U. of I. at Chicago
Int. Med.
- Stearns, Amy E.**
Ph.D., U. of Delaware
Psych. & Soc. Sci., Ped.
- Steed, W. David**
M.D., Northwestern U.
Psychi.
- Stefani, Stefano S.**
M.D., Italy
Th. Rad. (MTSN)
- Stefoski, Dusan**
M.D., Yugoslavia
Neuro. Sci.
- Stein, Edward**
M.D., Johns Hopkins U.
Psychi.
- Stein, Robert**
M.D., Austria
Pathology
- Stein, Robert M.**
M.D., Chicago Med. Sch.
Ophthalmology
- Stein, Robert N.**
M.D., Chicago Med. Sch.
Int. Med. (CH)
- Steinecker, Gary A.**
M.D., Loyola U. of Chicago
Int. Med. (CH)
- Steiner, Jan**
M.D., United Kingdom
Pathology
- Stephens, Alice E.**
Ph.D., Florida St. U.
Psych. & Soc. Sci. (MLSQ)
- Stepito, Robert C.**
M.D., Ph.D., Howard U.
Ob. & Gyne. (MTSN)
- Stern, Dean S.**
D.P.M., II. Col. Podiatric Med.
Ortho. Surg.
- Stetson, John B.**
M.D., Harvard U.
Anesthes.
- Stibolt, Thomas**
M.D., Rush U.
Int. Med.
- Stine, Robert H.**
M.D., Jefferson Med. Col. of Phila.
Ped.
- Stine, Terry M.**
M.D., U. Louisville
Int. Med.
- Stocker, Michael**
M.D., U. Wi.-Madison
Fam. Prac., Int. Med.
- Stohle, Michael R.**
D.D.S., U. of I. at Chicago
Gen. Surg.
- Stoioff, Madonna**
M.A., Kent St. U.
Oto. & Bronc., Rel. Hlth. Prg.
- Stokar, Elliot**
M.D.
Int. Med.
- Stolar, Joel**
M.D., Wayne St. U.
Ophthalmology
- Stoops, Joyce**
M.S., In. U.
Surg. Nsg. (GRNT)
- Storrs, Paul**
M.D.
Ortho. Surg.
- Stortz-Driscoll, L.**
M.S.N.
Ob. & Gyne. Nsg.
- Strachan, Kathleen**
M.S.N., Loyola U. of Chicago
Ped. Nsg.
- Strasser, Stephan**
M.D., Chicago Med. Sch.
Di. Rad. & Nuc. Med.
- Strassner, Howard**
M.D., U. of Chicago
Ob. & Gyne.
- Straus, Albert K.**
M.D., Northwestern U.
Ph.D., U. of I. at Chicago
Gen. Surg.
- Straus, Francis H.**
M.D., Harvard U.
Gen. Surg.
- Strehl, Francis W.**
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Gen. Surg. (COMM)
- Stringer, Jr., Nelson H.**
M.D., Meharry Med. Col.
Ob. & Gyne.
- Strohl, Lee H.**
M.D., Yale U.
Dermatology
- Strokosch, Gary R.**
M.D., U. of I. at Chicago
Ped.
- Strote, Scott E.**
M.D., S.I.U. at Carbondale
Ob. & Gyne. (CH)
- Strozier, Charles P.**
Ph.D., U. of Chicago
Psychi.
- Strzyz, James**
M.D., U. of I. at Chicago
Urology (CH)
- Stulc, Diana M.**
M.S., Rush U.
Ped. Nsg.
- Stumpe, Marjorie**
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Rel. Hlth. Prg.
- Stuppy, George W.**
Ph.D., M.D., U. of Chicago
Int. Med.
- Sturdevant, Frank**
M.D., U. Ia.
Ob. & Gyne.
- Styka, Phillip**
M.D., Rush U.
Anesthes.
- Stypuloski, Ellen**
M.S., Northern Illinois U.
Community Hlth. Nsg.
- Subramani, Govindaraju**
M.B.B.S., India
Int. Med. (MTSN)
- Suchy, Vladimir**
M.D., Sch. of Med. of Marquette U.
Fam. Prac. (COMM)
- Sugar, Oscar**
Ph.D., U. of Chicago
M.D., George Washington U.
Neuro. Surg.
- Suh, Sang**
M.D., Seoul U., Korea
Ortho. Surg.
- Sulayman, Rabi F.**
M.D., Lebanon
Ped. (CH)
- Suliaman, Fawzi**
M.B., B.Ch., Iraq
Ped. (CH)
- Sullivan, James D.**
M.D., Loyola U. of Chicago
Urology (WSUB)
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Ortho. Surg.
- Sundaram, Padma S.**
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Ortho. Surg., Ped.
- Sunseri, Albert J.**
Ph.D., U. Pittsburgh
Prev. Med.
- Susmano, Armando**
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Int. Med.
- Swarajyalakshmi, L.**
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Ortho. Surg.
- Swarts, Charles L.**
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Ped. (WSUB)
- Swedo, Gregory J.**
M.D., Rush U.
Pathology
- Swift, Carol E.**
M.S., Rush U.
Ped. Nsg.
- Sytsma, John**
M.D., Northwestern U.
Psychi. (CH)
- Szatkowski, Mary**
M.D., Loyola U. of Chicago
Ophthalmology
- Szczesny, Susan**
M.S., Rush U.
Psychi. Nsg.
- Szeto, Caroline**
M.D., Rush U.
Int. Med.
- Szymanski, Frederick J.**
M.D.
Dermatology
- Talcherkar, Padma A.**
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Ped. (CH)
- Tan, Anton**
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Di. Rad. & Nuc. Med. (MTSN)
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Rel. Hlth. Prg.
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Neuro. Sci.
- Tarnow, Jane**
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Surg. Nsg.
- Tarun, Donald**
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Int. Med.
- Tarzynski, Marian S.**
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Int. Med.
- Tatum, Vaughn**
M.D.
Int. Med. (MTSN)
- Tausk, Kasriel**
M.D.
Int. Med.
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M.D., U. of Saskatchewan
Int. Med.
- Taylor, Douglas W.**
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Int. Med.
- Tedesco, Dominic**
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- Tellis-Nayak, V.**
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Relig. & Hlth.
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- Thielbar, Sharon**
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Pathology (MTSN)
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Psychi. (CH)
- Thompson, Lee D.**
Ph.D., In. U.
Hlth. Sys. Mngemnt.
- Thompson, Pamela A.**
M.S.N., U. Rochester
Ped. Nsg. (COPL)
- Thompson, Ray E.**
M.D., U. of I. at Chicago
Int. Med. (GBUR)
- Thompson, Ronald**
M.D., U. Mich.-Ann Arbor
Di. Rad. & Nuc. Med.
- Thompson, Walter C.**
M.D., Loma Linda U.
Fam. Prac. (BETH)
- Thomson, Andrew**
M.D., In. U.-Purdue U. at Indpl.
Int. Med.
- Thomson, Cameron**
M.D., U. of I. at Chicago
Int. Med.
- Thonar, Eugene**
Ph.D., Witwatersrand U., South Africa
Biochem.
- Thorner, C. Veres**
M.D.
Int. Med. (MTSN)
- Tiesenga, Marvin**
M.D., U. of I. at Chicago
Gen. Surg. (WSUB)
- Tighe, John F.**
M.H.A., Xavier U.
Hlth. Sys. Mngemnt.
- Tilkin, Jeffrey M.**
M.D., U. of I. at Chicago
Psychi.
- Tilwalli, Daruba R.**
M.B.B.S., India
Int. Med.
- Tio, Diego U**
M.D., Cebu Inst. of Med., P.I.
Anesthes. (MTSN)
- Tiro, Aurelio**
M.D., Philippine Is.
Int. Med.
- Tiruvury, Anuradha**
M.B.B.S., India
Ped. (GRNT)
- Tkach, John I.**
M.D., Donetsk Med. U., U.S.S.R.
Fam. Prac. (CH)
- Tobin, Mary C.**
M.D., Rush U.
Int. Med.
- Toman, Maralyn E.**
M.D., U. of I. at Chicago
Int. Med.
- Tomas, Joaquin**
M.D., Spain
Gen. Surg.
- Tomyanovich, Mary**
M.D., Rush U.
Neuro. Sci.
- Topel, Jordan L.**
M.D., Loyola U. of Chicago
Neuro. Sci.
- Torbey, Peter**
M.D., France
Di. Rad. & Nuc. Med. (CH)
- Torres, Albert**
M.D.
Anesthes.
- Torres, Heriberto**
M.D., Rush U.
Ped.
- Torres, Hernando**
M.D., National U., Colombia
Neuro. Surg. (MTSN)
- Trager, Eugene P.**
M.D., U. of I. at Chicago
Psychi.
- Trakas, Demetrius A.**
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Psychi.
- Trenholme, Gordon M.**
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Int. Med., Pharmacology
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M.D., U. of I. at Chicago
Ophthalmology (MTSN)
- Tripp, Lee A.**
M.D.
Ob. & Gyn.
- Trobaugh, Jr., Frank E.**
M.D., Harvard U.
Int. Med., Pathology
- Trubitt, Mitchell J.**
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Int. Med. (MTSN)
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M.D., U. Heidelberg, Germany
Ob. & Gyn.
- Trufant, John E.**
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- Trujillo, Jamie**
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- Tsai, Eugene**
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Anesthes. (CH)
- Tsou, Richard**
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- Tsung, Jeffrey**
M.D., China-Taiwan
Pathology
- Tucker, W. Randolph**
M.D., U. of Cincinnati
Int. Med.
- Tunestam, Nils J.**
M.D., Sweden
Ped. (SWED)
- Turek, Louis H.**
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- Turner, David A.**
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- Turner, Irene R.**
Prev. Med.
- Turner, Thomas M.**
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- Twiss, Alston C.**
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Int. Med.
- Tyrrell, Shevawn**
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- Tyszka, Margaret F.**
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Surg. Nsg.
- Tyszka, Thomas S.**
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Int. Med.
- Uhlenhopp, Elliott L.**
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- Ulsafer-VanLanen, Jane**
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- Unfer, Susan**
M.D., Rush U.
Ped.
- Unterman, Terry**
M.D., Duke U.
Int. Med.
- Upadhyaya, Varsha V.**
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- Vahl, Raymond**
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Dermatology (CH)
- Valenta, James C.**
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- Van Hoorebeke, Kala**
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Rel. Hlth. Prg.
- Van Reken, Everett**
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Fam. Prac. (WSUB)
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- Vander Laan, Cornelius**
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Dermatology (CH)
- Vasan, Ushanalini**
M.B.B.S., India
Ped.
- Vazquez, Juan J.**
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- Velada, Pedro I.**
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Ped. (CH)
- Vellody, Kunhunni**
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- Venkataraman, Munusamy**
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Im. & Micr., Int. Med. (MTSN)
- Vento, Elio G.**
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Ob. & Gyne. (WSUB)
- Vercoe, James L.**
M.D., U. Mich.-Ann Arbor
Ped. (CH)
- Vidinli, Mustafa**
M.D., Turkey
Int. Med. (COPL)
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M.S., DePaul U.
Rel. Hlth. Prg.
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M.D.
Ob. & Gyne. (CH)
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- Voltolina, Eugene J.**
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Psychi. (CH)
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Surg. Nsg.
- Von Behrens, Wieland**
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- Von Roenn, Jamie E.**
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Int. Med.
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M.D., Switzerland
Gen. Surg. (MTSN)
- Vucicevic, Slobodan**
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Ortho. Surg. (MTSN)
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Fam. Prac. (GRNT)
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M.S., U. of I. at Chicago
Rel. Hlth. Prg.
- Wadgaonkar, Sudhanva**
M.D., India
Int. Med. (MTSN)
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M.D., U. of I. at Chicago
Di. Rad. & Nuc. Med. (SMAR)
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Relig. & Hlth.
- Wahls, Steven A.**
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Fam. Prac.
- Wai, William Y.**
M.D., China-Taiwan
Ped.
- Wakefield, Howard**
M.D., Rush Med. Col.
Int. Med.
- Walasek, Joan A.**
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Rel. Hlth. Prg.
- Waldman, Maurice**
M.D., U. of Paris, France
Psychi.
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B.S., U. of I. at Chicago
Rel. Hlth. Prg.
- Wall, James M.**
M.D., Chicago Med. Sch.
Fam. Prac. (CH)
- Wallin, Paul E.**
M.D.
Ped. (COMM)
- Wallner, Linden J.**
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Oto. & Bronc.
- Walsh, Marian H.**
M.S., Rush U.
Surg. Nsg.
- Walsh, Michelle**
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Ob. & Gyne. Nsg.
- Walter, Valre**
M.S.N., Loyola U. of Chicago
Community Hlth. Nsg.
- Walton, Mark K.**
Ph.D., M.D., U. of Chicago
Int. Med.
- Wanczyk, Teresa**
D.O.
Ped.
- Wang, Benjamin J.**
Ph.D., U. of Pennsylvania
M.D., Rush U.
Int. Med.
- Wang, Chang-Yang**
M.D., Koohsiung Med. Col.,
China-Taiwan
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- Wang, Josephine**
M.D., China-Taiwan
Ped. (CH)
- Wang, Kuo-Fuh**
M.D., China-Taiwan
Ped.
- Wang, Timothy**
M.B.B.S., Malaysia
Int. Med.
- Warden, Gail L.**
M.H.A., U. Mich.-Ann Arbor
Hlth. Sys. Mngmnt.
- Warner, Jennifer**
M.D., U. of Chicago
Di. Rad. & Nuc. Med.
- Warren, Dawn Marie**
M.D., Rush U.
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- Warren, Karen L.**
M.D.
Int. Med.

- Warren, William H.**
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- Waskerwitz, Steven**
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- Waskin, Hetty A.**
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Int. Med.
- Wasyliw, Orest**
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Psychi., Psych. & Soc. Sci.
- Watkins, Roy C.**
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Fam. Prac. (BETH)
- Watkis, Patricia**
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- Watson, Jr., Arthur C.**
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Ob. & Gyne. (GBUR)
- Watson, Laura H.**
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- Watts, Jr., Risher**
M.D.
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Psych. & Soc. Sci.
- Weddle, Dian**
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- Weens, Joan**
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- Weinberg, Milton**
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Cv. T. Surg.
- Weiner, Barbara**
J.D., DePaul U.
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- Weiner, William J.**
M.D., U. of I. at Chicago
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- Weinrib, Harry P.**
M.D., Ph.D., Leningrad U., U.S.S.R.
Pls. & Rec. Surg.
- Weinstein, James**
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Ortho. Surg.
- Weinstein, Robert J.**
M.D., Chicago Med. Sch.
Urology (MTSN)
- Weinstein, Ronald S.**
M.D., Tufts U.
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- Weinstock, Albert**
Ph. D., I.I.T.
Biochem., Pathology (MTSN)
- Weisbart, Edmond**
M.D., U. of I. at Chicago
Fam. Prac.
- Weiser, Stephen J.**
J.D., Washington U.
Hlth. Sys. Mngemnt.
- Weisman, Nancy E.**
J.D., Chicago-Kent Col. of Law
Hlth. Sys. Mngemnt.
- Weiss, Mark S.**
M.D., New York Med. Col.
Ped.
- Weiss, Marvin B.**
D.D.S., U. of I. at Chicago
Gen. Surg.
- Weissberger, Lynne E.**
Ph.D., Cornell U.
Rel. Hlth. Prg.
- Weller, Herschel**
M.D., U. of I. at Chicago
Int. Med. (MTSN)
- Weller, Leslie**
M.S., Rush U.
Medical Nsg.
- Wellman, William L.**
M.S., U. Mich.-Dearborn
Hlth. Sys. Mngemnt.
- Welsh, Brady**
M.D., Northwestern U.
Fam. Prac.
- Welsh, Thomas J.**
D.V.M., Ok. St. U.
Ph.D., U. of I. at Chicago
Im. & Micro.
- West, James Walter**
M.D., U. of Chicago
Int. Med.
- West, James Ward**
M.D., Loyola U. of Chicago
Psychi.
- Westerman, Maxwell P.**
M.D., U. Louisville
Int. Med. (MTSN)
- Westheimer, Ruth**
M.D., Rush U.
Psychi.
- Wettstein, Robert**
M.D., U. of Ca.-L.A.
Psychi.
- Wetzel, Ann**
M.D.
Ob. & Gyne.
- Weyrens, Francis P.**
M.D., St. Louis U.
Ob. & Gyne. (GBUR)
- Whisler, Kenneth E.**
Ph.D., U. Wi.-Madison
Biochem.
- Whisler, Walter**
M.D., Ph.D., U. of I at Chicago
Neuro. Surg., Neuro. Sci., Biochem.
- Whitaker, Ronald H.**
M.S., Ohio St. U.
Hlth. Sys. Mngemnt
- White, Donald R.**
M.D., Baylor Co. of Medicine
Pediatrics (CDH)
- White, Jeanette**
M.S., Ohio St. U.
Rel. Hlth. Prg.
- White-Traut, Rosemary**
M.S., Boston U.
Ped. Nsg.
- Wichter, Melvin**
M.D., New York Med. Col.
Neuro. Sci. (CH)
- Wickham, Rita**
M.S., Northern Illinois U.
Med. Nsg.
- Wigder, Herbert N.**
M.D., U. Wi.-Madison
Fam. Prac. (CH)
- Wilbanks, George D.**
M.D., Duke U.
Ob. & Gyne.
- Wiley, Darrell B.**
M.D., U. of I. at Urbana
Gen. Surg.
- Wiley, Elizabeth**
M.D., Johns Hopkins U.
Pathology
- Wilhelm, Emanuel C.**
M.D., Loyola U. of Chicago
Ob. & Gyne. (CH)
- Wilkinson, Connie**
M.P.H., Tulane U. of Louisiana
Gerontological Nsg.
- Willander, Duane A.**
M.D., Northwestern U.
Orth. Surg. (GBUR)
- Williams, Denise E.**
B.S., U. of I. at Chicago
Rel. Hlth. Prg.
- Williams, Jack**
M.D.
Int. Med. (GRNT)
- Williamson, Patricia**
M.S., Rush U.
Surg. Nsg.
- Williamson, Wayne**
M.D., U. of Cincinnati
Int. Med.
- Wilson, Robert S.**
Ph.D., Wayne St. U.
Psych. & Soc. Sci.
- Wilson, Robert W.**
M.D., U. of Mo.-Columbia
Fam. Prac. (COMM)
- Wilson, Victor T.**
M.D., U. of Iowa
Gen. Surg.
- Wing, Herman**
M.D., U. of Tx. H. S. Ctr. at Sn. Anton.
L.L.B., U. Tx. at Austin
Int. Med.
- Winter, Paul L.**
M.D., Northwestern U.
Int. Med.
- Winters, Bonnie**
M.S., Adelphi U.
Med. Nsg.
- Wirtshafter, Robert**
M.D., U. of Chicago
Ped. (CH)
- Withiam, Alan**
M.D., U. of Chicago
Fam. Prac.
- Witkowski, Leon J.**
M.D., Northwestern U.
Gen. Surg.
- Witkowski, Robert**
M.D., Rush U.
Gen. Surg.
- Witt, Thomas R.**
M.D., Northwestern U.
Gen. Surg.
- Wojcik, Edward**
M.D., Loyola U. of Chicago
Ortho. Surg. (COMM)
- Wolf, Marion E.**
M.D., U. of Chile, Chile
Psychi.
- Wolf, Mark R.**
D.D.S., U. of I at Chicago
Gen. Surg. (MTSN)
- Wolfe, Charles K.**
M.D., U. of Pennsylvania
Int. Med.

- Wolfe, John R.**
M.D., Northwestern U.
Ob. & Gyne., Psychi.
- Wolfson, Michael R.**
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Int. Med.
- Wolgemuth, Christine L.**
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Rel. Hlth. Prg.
- Wolter, Janet**
M.D., U. of I. at Chicago
Int. Med.
- Wong, Alfonso**
M.D., U. of the East, Pl.
Anesthes. (CH)
- Wong, Paul W.**
M.D., Hong Kong
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- Wood, Joseph P.**
M.D., U. of I. at Chicago
Fam. Prac. (CH)
- Woodman, James L.**
Ph.D., U. of Pennsylvania
Ortho. Surg.
- Wool, Norman L.**
M.D., Chicago Med. Sch.
Gen. Surg.
- Wright, Donovan G.**
M.D., U. of Mn. of Mnpl. St. Paul
Psychi.
- Wu, Kenneth**
M.D., China-Taiwan
Int. Med.
- Wyhinny, George**
M.D., U. of I. at Chicago
Ophthalmology
- Wyhinny, Patricia**
M.D., Rush U.
Dermatology
- Yacullo, William S.**
Ph.D., U. of Iowa
Oto. & Bronc., Rel. Hlth. Prg.
- Yadava, Ved Prakash**
M.D., India
Int. Med. (GRNT)
- Yamamoto, Leslie T.**
M.D., Rush U.
Int. Med.
- Yasoff, W. Alan**
M.D., Northwestern U.
Int. Med.
- Yballe, Sonia B.**
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Psychi (MTSN)
- Yelich, Michael**
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Physiol., Anesthes. (MTSN)
- Yellen, Harry J.**
M.D., Loyola U. of Chicago
Int. Med. (MTSN)
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Int. Med. (MTSN)
- Yordan, Edgardo**
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- Yoshizawa, Ellen H.**
B.S., Rush U.
Rel. Hlth Prg.
- Young, Carolyn**
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- Young, Deatra**
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Fam. Prac. (CH)
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Int. Med. (MTSN)
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Int. Med.
- Zarrabi, Jalil**
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- Zaverdas, George**
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Int. Med.
- Zeisler, Karl**
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M.B.A., Northwestern U.
Hlth. Sys. Mngemnt.
- Zeitz, Howard J.**
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Im. & Micr., Int. Med.
- Zeldow, Peter**
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- Zelinger, Allan B.**
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Int. Med. (CH)
- Zelinger, Bernard B.**
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Ob. & Gyne. (CH)
- Zemel, Edward**
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Im. & Micr.
- Zervopoulos, Evangelia**
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- Zheutlin, Lynne**
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- Ziarko, Jr., Mitchell**
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Int. Med.
- Ziebel, Dana**
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- Zitter, Robert E.**
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Fam. Prac., Psych. & Soc. Sci. (CH)
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- Zoldan, Jack**
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Int. Med.
- Zuckerman, Victor**
D.O.
Ped.
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Jean Schweppe Armour Chair of Neurology

This, the first endowed chair at a private hospital in this country, was established in 1963 as a memorial to Jean Schweppe Armour by A. Watson Armour III, other members of the Armour family, and by her friends as a tribute to her leadership as a volunteer for the Medical Center and as a member of its Woman's Board.

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Established in 1965 by John W. Watzek, Jr., an industrialist, to honor the memory of his parents. The decision grew out of a relationship with the Medical Center and with his physician, the late Richard B. Capps, M.D.

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The Elodia Kehm Professor of
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Director of the Section of Laboratory
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Established in 1972 as a lasting memorial to the late Stanley G. Harris, Sr., who provided Rush-Presbyterian-St. Luke's with leadership and philanthropy for many years.

Holder: Jan A. Fawcett, M.D.
The Stanley G. Harris, Sr.,
Professor of Psychiatry
Chairman of the Department of
Psychiatry

Harriet Blair Borland Chair of Pathology

Established in 1972 by Chauncey B. Borland, a Trustee of Rush-Presbyterian-St. Luke's Medical Center for many years, in memory of his mother who shared his interest in clinical pathology and supported the same interests during her lifetime.

Holder: Ronald S. Weinstein, M.D.
The Harriet Blair Borland Professor
of Pathology
Chairman of the Department of
Pathology

Jack Fraser Smith Chair of Surgery

Established in 1974 by Bertha Spaeti Smith to recognize and honor, in memory of her husband, outstanding physicians and surgeons in the Department of General Surgery.

Holder: Steven G. Economou, M.D.
The Jack Fraser Smith Professor
of Surgery
Associate Chairman of the
Department of General Surgery

Otho S. A. Sprague Chair of Pathology

Established in 1975 to recognize the Otho S. A. Sprague Memorial Institute which was created through the will of Otho S. A. Sprague, civic leader in Chicago at the turn of the century, and which since 1938 has supported research at Rush, especially in the Departments of Biochemistry, Immunology/Microbiology and Pathology.

Holder: George M. Hass, M.D.
The Otho S. A. Sprague Professor of
Pathology, Emeritus

Francis N. and Catherine O. Bard Chair of Physiology

Established in 1975 by bequest of Francis N. Bard, who took an active interest in the

Medical Center, an interest which his family continues.

Holder: Robert S. Eisenberg, Ph.D.
The Francis N. and Catherine O. Bard
Professor of Physiology
Chairman of the Department of
Physiology

Robert C. Borwell Chair of Neurology

Established in 1978 by Robert C. Borwell, Trustee of Rush-Presbyterian-St. Luke's Medical Center, to set an example for others to follow for the endowment needs of the new Rush University and to support the research and treatment of multiple sclerosis and related diseases.

Holder: Floyd A. Davis, M.D.
The Robert C. Borwell Professor of
Neurology
Acting Director of the Multiple
Sclerosis Center

Samuel G. Taylor III, M.D., Chair of Oncology

Established in 1978 to honor Samuel G. Taylor III, M.D., professor of internal medicine, emeritus, whose career began with a Rush degree 50 years ago, by his friends, patients, and colleagues. Dr. Taylor remains actively involved in the Section of Medical Oncology which he founded.

Holder: Jules E. Harris, M.D.
The Samuel G. Taylor III, M.D.,
Professor of Oncology
Director of the Section of Medical
Oncology

John L. and Helen Kellogg Dean of the College of Nursing

Established in 1978 by the John L. and Helen Kellogg Foundation in the College of Nursing as part of a munificent \$4.5 million gift which also named the Kellogg Pavilion and created the John L. and Helen Kellogg National Center for Excellence in Nursing at the Medical Center as a memorial to Mr. and Mrs. Kellogg.

Holder: Luther P. Christman, Ph.D., R.N.
The John L. and Helen Kellogg
Dean of the College of Nursing
Vice President for Nursing Affairs

Helen Shedd Keith Chair of General Surgery

Established in 1980 in tribute to Helen Shedd Keith, first a member of St. Luke's Hospital Woman's Board and later of the combined boards of both Presbyterian and St. Luke's Hospitals, a founder of the Anchor Cross Society, and generous donor to Rush-Presbyterian-St. Luke's Medical Center. The chair was endowed by her daughter and son-in-law, Mary and John Bent. Bent is a Life Trustee of the Medical Center.

Holder: Harry W. Southwick, M.D.
The Helen Shedd Keith Professor
of General Surgery
Chairman of the Department of
General Surgery

Clark Wylie Finnerud, M.D., Chair of Dermatology

Established in 1981 by Mrs. Clark W. Finnerud in honor of her late husband, distinguished alumnus and professor of Rush Medical College and towering figure in the field of American dermatology.

Holder: Frederick D. Malkinson, M.D., D.M.D.
The Clark Wylie Finnerud, M.D.,
Professor of Dermatology
Chairman of the Department of
Dermatology

In addition, the following chairs are either partially or fully endowed but are currently unoccupied:

Richard B. Capps, M.D., Chair of Hepatology

Established in 1968 by friends and patients in recognition of the contributions of Richard B. Capps, M.D., to medicine, particularly his pioneering research and study of hepatitis.

Josephine Dyrenforth Chair of Gastroenterology

Established in 1968 by a bequest of Mrs. Josephine Dyrenforth in appreciation of the care given her husband, Arthur, a well known Chicago attorney.

Willard L. Wood, M.D., Chair of Rheumatology

Established in 1969 through a bequest of the late Charles S. Pillsbury, his family, and other grateful patients of Willard L. Wood, M.D., who was graduated from Rush Medical College and was a physician and a Rush University faculty member for more than 55 years.

Chair of Cardiovascular-Thoracic Surgery

Established under the leadership of John Bent, Trustee, in 1970.

Harry Boysen, M.D., Chair of Obstetrics and Gynecology

Established in 1970 by gifts from the Woman's Board, the Trustees, and grateful patients of Harry Boysen, M.D.

Ralph C. Brown, M.D., Chair of Internal Medicine

Established in 1970 by the family and friends of Ralph C. Brown, M.D., graduate of Rush Medical College who served as professor of medicine and who was a medical staff member of Presbyterian-St. Luke's Hospital until his death in 1954.

James Lowenstine Chair of Internal Medicine

Created in 1971 by the Lowenstine Foundation to honor the president of the Central Steel and Wire Company and to inspire and promote the Rush philosophy of patient-centered care and, in particular, the clinical training of the family doctor.

J. Bailey Carter, M.D., Chair of Cardiology

Established in 1972 by his widow, Ruth, this chair honors J. Bailey Carter, M.D., a well-known professor of cardiology on the Rush Medical College faculty from 1928 to 1938.

Stanton A. Friedberg, M.D., Chair of Otolaryngology and Bronchoesophagology

Established in 1973 by the family and friends of Stanton A. Friedberg, M.D., a preeminent physician and teacher of Rush Medical College and president of the medical staff from 1964 to 1966.

Chair of Anesthesiology

Established in 1973 primarily by gifts from members of the Department of Anesthesiology.

Chair of Orthopedic Surgery

Established in 1977 by personal gifts of the members of the medical staff, Department of Orthopedic Surgery.

James A. Campbell, M.D., Distinguished Service Chair

Established in 1981 by a group of former chairmen of the Trustees and special friends of the Medical Center to permanently recognize the vision, imagination, and personal dedication of its president.

Muehrcke-Kark Chair of Nephrology

To honor Robert M. Kark, M.D, who as professor of internal medicine at Rush Medical College is world renowned for his pioneer work in renal biopsies. Dr. Kark has trained countless physicians and investigators, among them Robert C. Muehrcke, M.D., professor, internal medicine, Rush Medical College and director of the Kidney Center and director of medical education at West Suburban Hospital, Oak Park, Illinois. Dr. Muehrcke initiated the establishment of this chair.

Also representing a major endowment is:

The William Noble Lane Medical Research Organization

This, the first Medical Research Organization in the Midwest and the second in the nation, honors the memory of William Noble Lane, distinguished civic leader and entrepreneur. It was established in 1980 by the William Noble Lane Foundation to engage in medical research in conjunction with a hospital.

Principal Investigator: Eugene J-M. A. Thonar,
Ph.D.

Assistant Professor of
Biochemistry

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Governance

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The Graduate College

John E. Trufant, Ed.D.
 Dean, The Graduate College

Rush University Affiliations

Affiliated Colleges

Beloit College, Beloit, Wisconsin 53511
 Carleton College, Northfield, Minnesota 55057
 Colorado College, Colorado Springs,
 Colorado 80903

Cornell College, Mount Vernon, Iowa 52314
 Fisk University, Nashville, Tennessee 37203
 Grinnell College, Grinnell, Iowa 50112
 Illinois Institute of Technology, Chicago,
 Illinois 60616
 Knox College, Galesburg, Illinois 61401
 Lake Forest College, Lake Forest, Illinois 60045
 Lawrence University, Appleton,
 Wisconsin 54911
 Macalester College, St. Paul, Minnesota 55105
 Monmouth College, Monmouth, Illinois 61462
 North Central College, Naperville,
 Illinois 60540
 Ripon College, Ripon, Wisconsin 54971
 Wheaton College, Wheaton, Illinois

Clinical Network

Bethany Hospital, Chicago, Illinois
 Central DuPage Hospital, Winfield, Illinois
 Christ Hospital, Oak Lawn, Illinois
 Community Memorial General Hospital,
 LaGrange, Illinois
 Copley Memorial Hospital, Aurora, Illinois
 Galesburg Cottage Hospital, Galesburg, Illinois
 Grant Hospital of Chicago, Chicago, Illinois
 LaPorte Hospital, LaPorte, Indiana
 Mile Square Health Center, Inc.,
 Chicago, Illinois
 Mount Sinai Hospital Medical Center,
 Chicago, Illinois
 St. Mary's Hospital, Streator, Illinois
 Schwab Rehabilitation Center,
 Chicago, Illinois
 Skokie Valley Hospital, Skokie, Illinois
 Swedish Covenant Hospital, Chicago, Illinois
 West Suburban Hospital Medical Center,
 Oak Park, Illinois

Committees

Rush Medical College

Committees exist within the structure of Rush Medical College to assure the appropriate involvement of faculty and students in the various activities of the college. Except for the Rush Medical College Student Council, each committee includes representation from both faculty and students.

Faculty Council

The Faculty Council is the senior representative body within Rush Medical College. The membership includes nine professors, three associate professors, three assistant professors, three instructors or assistants, and one student from each class, each chosen by vote of the corresponding constituency.

Committee on Committees

The Committee on Committees has as its primary responsibility the nomination of individuals to serve on the various standing committees of the medical college. Sitting as the Committee on Dialogue, the committee is also responsible for dealing with grievances presented by members of the Rush Medical College community.

Student Council

The Student Council is the representative government for students of Rush Medical College and consists of six representatives from each of the four classes within the medical school. The council provides a mechanism to facilitate the exchange of information on matters affecting the student body.

The standing committees of Rush Medical College include:

Committee on Academic Freedom

This committee concerns itself with questions of academic freedom. It works closely with the Committee on Dialogue and the Faculty Council in resolving grievances involving questions of academic freedom.

Committee on Admissions

Members of this committee are responsible for recommending to the dean students for admission to the medical college. The duties of the committee members include selecting those applicants who will be interviewed; interviewing candidates; choosing applicants who will be offered acceptances to the

medical college; and reviewing criteria applied for medical student admissions to maintain academic excellence.

Committee on Affirmative Action

The Committee on Affirmative Action serves to advise the dean and the faculty regarding policies, procedures, and issues which affect the recruitment, retention, and promotion of minority and women faculty and students in the college. The committee works closely with the equal opportunity coordinator for academic affairs.

Curriculum Committee

The Curriculum Committee is responsible for the design and content of the curriculum. On the basis of its own surveys and the evaluations of the Committee on Educational Appraisal, this committee evaluates the need and, as deemed appropriate, develops recommendations for curricular modification.

Committee on Educational Appraisal

The Committee on Educational Appraisal is responsible for evaluating the courses of Rush Medical College. The committee administers, with the assistance of each course director, and analyzes course, clerkship, and faculty assessments provided by students. An annual report is produced for each course within the medical college curriculum.

Committee on Educational Resources

The principal function of the Committee on Educational Resources is to evaluate the utilization, organization and effectiveness of the sections of the Center for Educational Resources as they relate to the faculty and students of the medical college.

Committee on Senior Faculty Appointments and Promotions

The function of the Committee on Senior Faculty Appointments and Promotions (COSFAP) is to review recommendations submitted by chairpersons for appointments or promotions of faculty members to academic ranks of indefinite terms in Rush Medical College. Recommendations for appointments or promotions are then submitted to the Office of the Dean for further action.

Committee on Student Affairs

The Committee on Student Affairs (COSA) is concerned with noncurricular needs of medical students. Its regular responsibilities include an annual evaluation of the effectiveness and adequacy of programs and services

available to students, improvement of current programs, and initiation of new activities when their need is recognized. The committee works closely with the University Office of Academic Support Services.

Committee on Student Evaluation and Promotion

The Committee on Student Evaluation and Promotion (COSEP) is responsible for developing policies concerning student status, evaluation and promotion; reviewing the academic performance of medical college students; making recommendations to the Faculty Council and dean concerning promotion, graduation, and dismissal of students; and determining requirements for remedial action for students who have failed medical college courses.

Committee on Student Judiciary Review

It is the function of the Student Judiciary Review Committee to review any act suggesting unprofessional conduct by a medical student brought to its attention. Requests for action by the Committee on Student Judiciary Review in reference to individual students of Rush Medical College are made to the dean of the college by members of the Rush Medical College faculty. Such requests are reviewed by the dean and the chairperson of the Committee on Student Judiciary Review and a decision made whether to bring the issue to the full committee or to seek resolution of the issue by alternative means.

College of Nursing

Faculty Senate

The Faculty Senate is the governing body for the faculty and operates as the Committee on Committees. The senate has nine members representing each academic rank level, as well as members from the faculty-at-large. Members of this body are elected annually and the senate elects its own chairperson. Two student representatives also serve on the senate.

The standing committees of the College of Nursing assist with the work of the college. Members of the committees are elected by the total faculty every June. The committees include:

Graduate Admissions, Progressions and Graduations

This committee is responsible for maintaining the admission and progression standards

and policies for the graduate programs. There are five members on this committee plus one student representative.

Graduate Curriculum

This committee serves as the monitoring resource for the graduate curriculum. The committee reviews all new courses and/or major changes in the curriculum, establishes and monitors methodology for curriculum evaluation and provides overall consistency for curriculum development. There are five members on this committee plus one student representative.

Undergraduate Admissions and Progressions

This committee is responsible for maintaining the admission and progression standards and policies for the undergraduate program. There are six members on this committee plus one student representative.

Undergraduate Curriculum

This committee serves as the monitoring resource for the undergraduate curriculum. The committee reviews all new courses and/or major changes in the curriculum, establishes and monitors methodology for curriculum evaluation and provides overall consistency for curriculum development. There are six members on this committee plus two student representatives.

Affirmative Action

This committee is involved with the recruitment and retention of students and faculty from minority groups and data collection and research in relation to affirmative action activities and progress. There are six members on this committee including one student representative.

Educational Resource

This committee deals with the educational resource needs of the College of Nursing and provides liaison with the University Educational Resource Committee. There are seven members on this committee including two student representatives.

Faculty Appointments and Promotions Committee

This committee acts upon the appointments and promotions of faculty in accordance with the Rules of Governance. There are five members on this committee.

Faculty Development Committee

This committee is responsible for the design and implementation of programs to promote the growth and development of faculty. There are six members on this committee including a student representative.

College of Health Sciences

College Council

The senior representative governing body of the College of Health Sciences is the College Council. The College Council membership is comprised of both faculty members and students. The dean of the college serves as the chairperson of the College Council. Faculty members represent all departments and ranks within the college. Students represent both undergraduate and graduate levels.

The Graduate College

Executive Committee

The Graduate College Executive Committee is the senior representative body for The Graduate College. The committee is made up of all program directors, three faculty-at-large representatives, and two student representatives. The Executive Committee is chaired by the dean of The Graduate College.

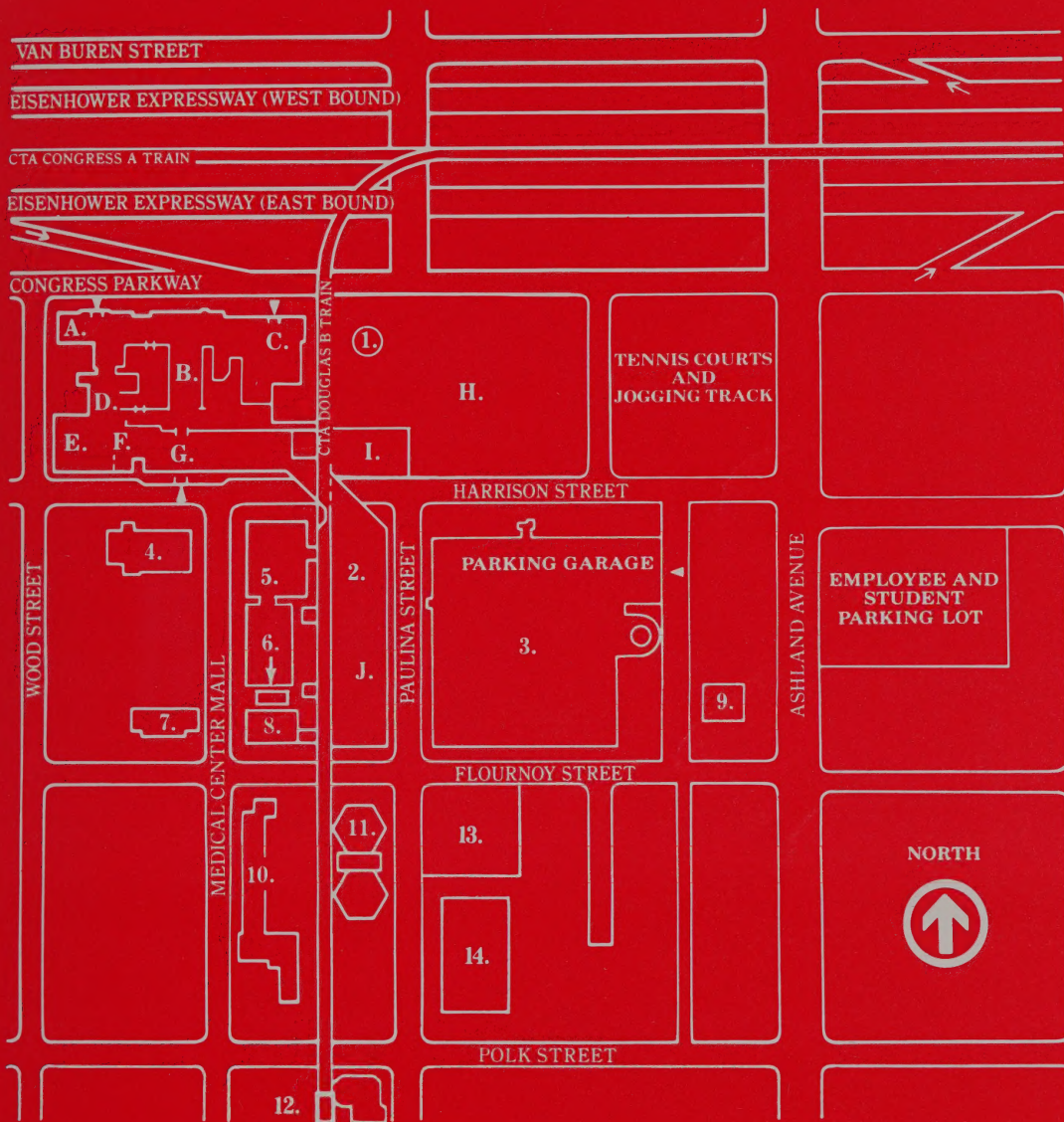
Specific regulations governing the process which results in a student's completed application for review and also in final award of a Ph.D. concurrently in whole or part with the M.D. degree are developed by the graduate divisions responsible for the candidate's progress. While such regulations may differ in detail from one division to another, each division's program and regulations must be reviewed for approval by the Executive Committee of The Graduate College.

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**Rush-Presbyterian-St. Luke's
Medical Center
Rush University Campus**



①. Presbyterian-St. Luke's Hospital

- A. Jones
- B. Pavilion
- C. Kellogg Pavilion
- D. Murdock
- E. Rawson
- F. Senn
- G. Jelke SouthCenter
- H. Atrium Building
- I. Woman's Board
Cancer Treatment Center

2. Academic Facility

- J. Employee and Student Cafeteria

3. Parking Garage

- 4. Schweppe-Sprague Hall
- 5. Professional Building
- 6. Parcourse Fitness Cluster
- 7. Kidston Apartments
- 8. McCormick Apartments
- 9. Laurance Armour Day School
- 10. Marshall Field IV
Mental Health Center
- 11. Johnston R. Bowman
Health Center for the Elderly
- 12. Polk Street Station, CTA
- 13. Basketball/Volleyball Courts
- 14. Human Resources Center for
Employee Development

